2022 long-term capital markets outlook

The Orange Book

MACKENZIE Investments

Contents

Introduction

Mackenzie's Multi-Asset Strategy (MAS) Team presents the 2022 Orange Book, our long-term capital market outlook on domestic and global markets. The MAS Team is co-led by Todd Mattina, Senior Vice President and our in-house Chief Economist, and Nelson Arruda, Senior Vice President and Portfolio Manager. The team has deep expertise across a broad range of strategies including:

- Multi-asset portfolios
- A suite of dynamic currency hedging approaches based on valuation, sentiment and macro conditions developed and maintained in-house
- Liquid alternative strategies that include systematic macro, commodities, currencies, CTA, and market neutral equity factor portfolios
- Long only, multi-factors equity portfolios (smart beta)

Members of the Team engage with institutional investors across Canada on strategic & tactical asset allocation, academic partnerships, and creation of white papers. The group's pedigree naturally fits with the thinking of institutional investors, and that perspective is reflected in the consideration of risk and return in everything we do.

Todd Mattina,
PhD

Nelson Arruda,
MFin, MSc, CFA

The MAS Team manages a broad range of strategies, including dynamic currency hedging, liquid alternatives and multi-factor equity funds

Executive summary

1 Expected returns

Over the next ten years, we expect average returns on most asset classes to be lower than realized returns in recent decades, weighed down by low risk-free rates and rich valuations.

2 Funding conditions

The financial position of institutional investors generally strengthened in the last year with the outperformance of risk assets and rise in long-term bond yields. Given the lower return outlook, investors may need to consider adapting strategic asset allocations to achieve their long-term return targets. Managing the volatility implications will become increasingly important.

3 Strategies

Potential strategies for investors to lower risk while maintaining target returns include prudent use of leverage to increase interest rate sensitivity, greater diversification, strategic asset tilts and FX hedging, and evaluating portfolio sensitivity to macro risks.

4 Stock-bond diversification

While we expect stock-bond correlations to be less negative than during the disinflationary 2010s, sovereign bonds should remain efficient sources of diversification for equity risk in multi-asset portfolios.

5 Alternatives

Investors can more readily access liquid alternative strategies and alternative asset classes to help control risk while adding new sources of return.

6 Relative equity

US equities are expected to underperform relative to other equity markets, while emerging market equities are well positioned to outperform.

7 FX

Among major currencies, the US dollar remains expensive considering economic fundamentals. We expect it to depreciate relative to major G-5 currencies over the next several years.

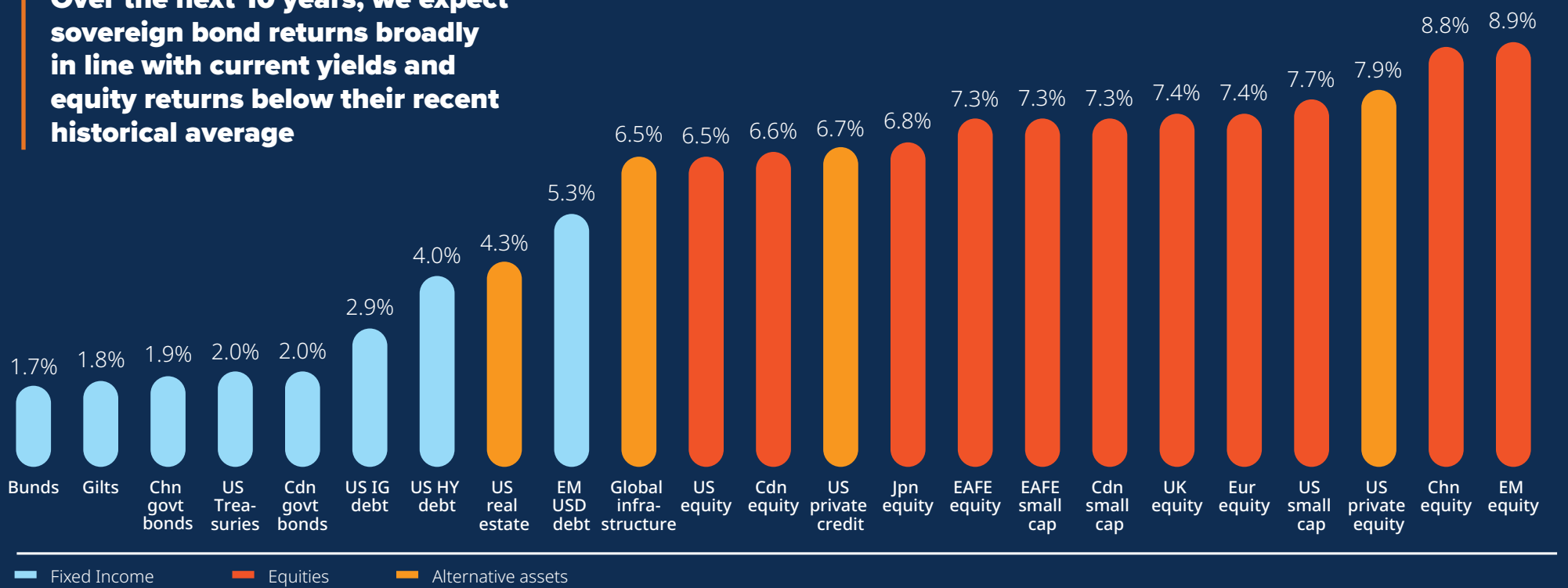
8 Macro risks

Over the next year, the two key macro risk scenarios include (1) an inflation breakout and (2) a global growth slowdown triggered by the 2022 fiscal cliff and monetary tightening. We estimate that the former scenario could lower real returns for most assets, while the latter scenario could lead to equities underperforming and sovereign bonds rallying.

Key findings

10-year expected returns (hedged to CAD)

Over the next 10 years, we expect sovereign bond returns broadly in line with current yields and equity returns below their recent historical average

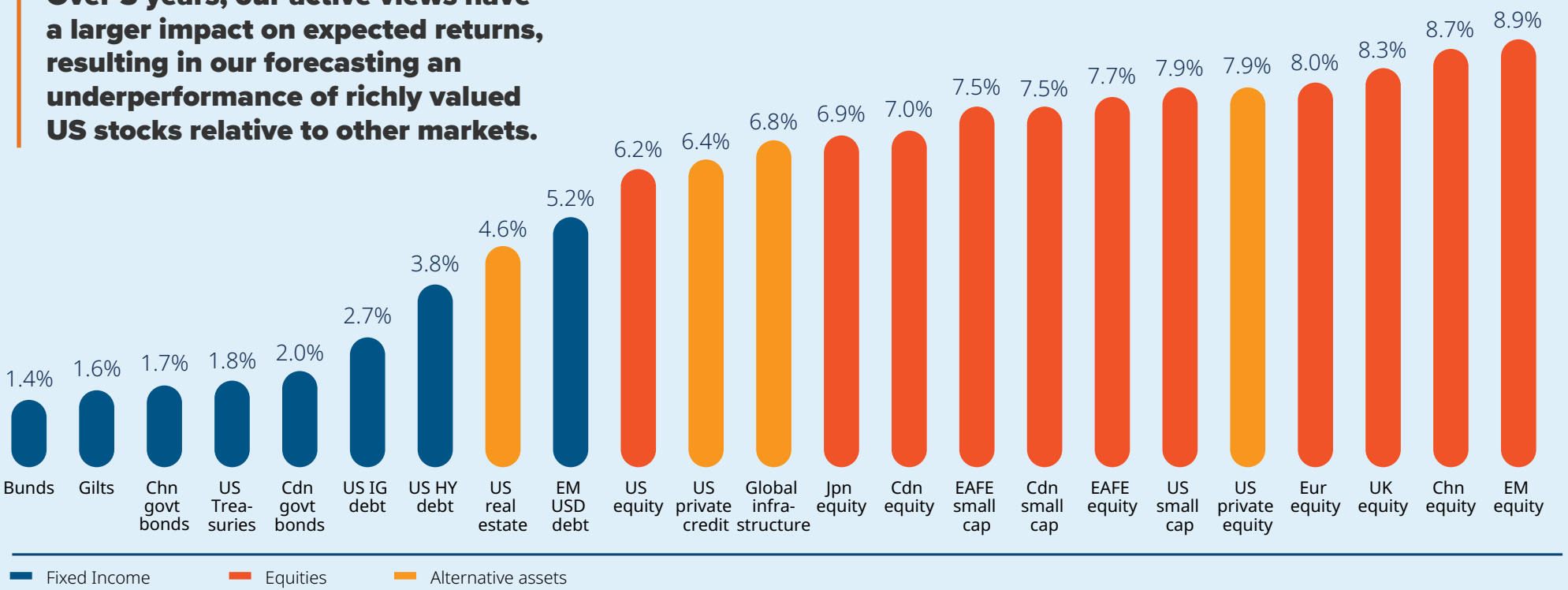


Expected geometric returns are shown on a nominal basis, before fees for all asset classes, except for the private asset classes, which are after fees. Management fees will vary by asset class, with higher fees expected for private assets than for public assets. The four private asset classes are US core real estate (unlevered), Global infrastructure equity (unlevered), private equity (90% debt-equity), private credit fund (floating rate, 2x leverage). Please refer to the following page for our five-year expected annual returns, where the active expected return component based on our value, macro and sentiment inputs will play a greater role in shaping returns. Over a 10-year horizon, returns will tend to converge to the combination of the risk-free rate and the asset class risk premium, as active return expectations will gradually decay over time. Developed-market sovereign bond returns shown here reflect the expected return to investing in a constant-maturity, 10-year government bond.

Key findings

5-year expected returns (hedged to CAD)

Over 5 years, our active views have a larger impact on expected returns, resulting in our forecasting an underperformance of richly valued US stocks relative to other markets.



Expected geometric returns are shown on a nominal basis, before fees for all asset classes, except for the private asset classes. As discussed in our 10-year return expectations, the five-year return expectations have a greater weight in our own active views, which will have more weight over a five-year horizon than over 10 years.

Key findings

Expected asset class volatility and correlations

	Volatility	US Treasuries	Cdn govt bonds	Bunds	Gilts	US IG debt	US HY debt	EM USD debt	Chn govt bonds	US equity	Cdn equity	Jpn equity
US Treasuries	6.1%	1.0										
Cdn govt bonds	5.6%	0.8	1.0									
Bunds	5.0%	0.6	0.6	1.0								
Gilts	6.0%	0.8	0.7	0.7	1.0							
US IG debt	6.4%	0.6	0.5	0.5	0.5	1.0						
US HY debt	9.5%	-0.1	0.0	-0.1	-0.1	0.5	1.0					
EM USD debt	13.2%	0.3	0.2	0.1	0.2	0.6	0.6	1.0				
Chn govt bonds	4.5%	0.2	0.2	0.2	0.2	0.1	-0.2	0	1.0			
US equity	17.4%	-0.1	-0.1	-0.2	-0.1	0.3	0.6	0.5	-0.1	1.0		
Cdn equity	14.9%	-0.1	0.0	-0.1	-0.1	0.3	0.6	0.5	-0.1	0.8	1.0	
Jpn equity	18.4%	-0.3	-0.2	-0.2	-0.2	0.1	0.4	0.3	-0.2	0.6	0.5	1.0
UK equity	15.5%	-0.1	-0.1	-0.1	0.0	0.3	0.5	0.5	-0.1	0.7	0.7	0.5
Eur equity	18.3%	-0.2	-0.1	-0.2	-0.1	0.2	0.6	0.4	-0.1	0.8	0.7	0.6
EM equity	23.5%	-0.1	-0.1	-0.1	-0.1	0.4	0.6	0.6	-0.2	0.8	0.7	0.5
Chn equity	29.4%	-0.1	-0.1	-0.1	-0.1	0.1	0.3	0.2	-0.2	0.4	0.3	0.3
US small cap	21.5%	-0.2	-0.2	-0.2	-0.2	0.3	0.6	0.5	-0.2	0.9	0.7	0.6
Cdn small cap	20.4%	-0.2	-0.1	-0.2	-0.2	0.4	0.6	0.5	-0.1	0.7	0.7	0.4
EAFE small cap	16.0%	-0.3	-0.2	-0.2	-0.2	0.2	0.6	0.5	-0.2	0.8	0.7	0.7
EAFE equity	15.4%	-0.2	-0.1	-0.2	-0.2	0.2	0.6	0.5	-0.2	0.8	0.7	0.8
Global infrastructure	15.2%	0.1	0.1	0.0	0.1	0.5	0.6	0.6	-0.1	0.8	0.7	0.4
US private credit	13.3%	-0.3	-0.2	-0.2	-0.2	0.3	0.7	0.4	-0.2	0.5	0.5	0.4
US private equity	25.4%	-0.1	0.0	-0.1	-0.1	0.3	0.5	0.5	-0.1	0.8	0.7	0.5
US real estate	11.7%	0.0	0.0	0.0	0.1	0.4	0.6	0.5	0.0	0.6	0.5	0.4

Key findings

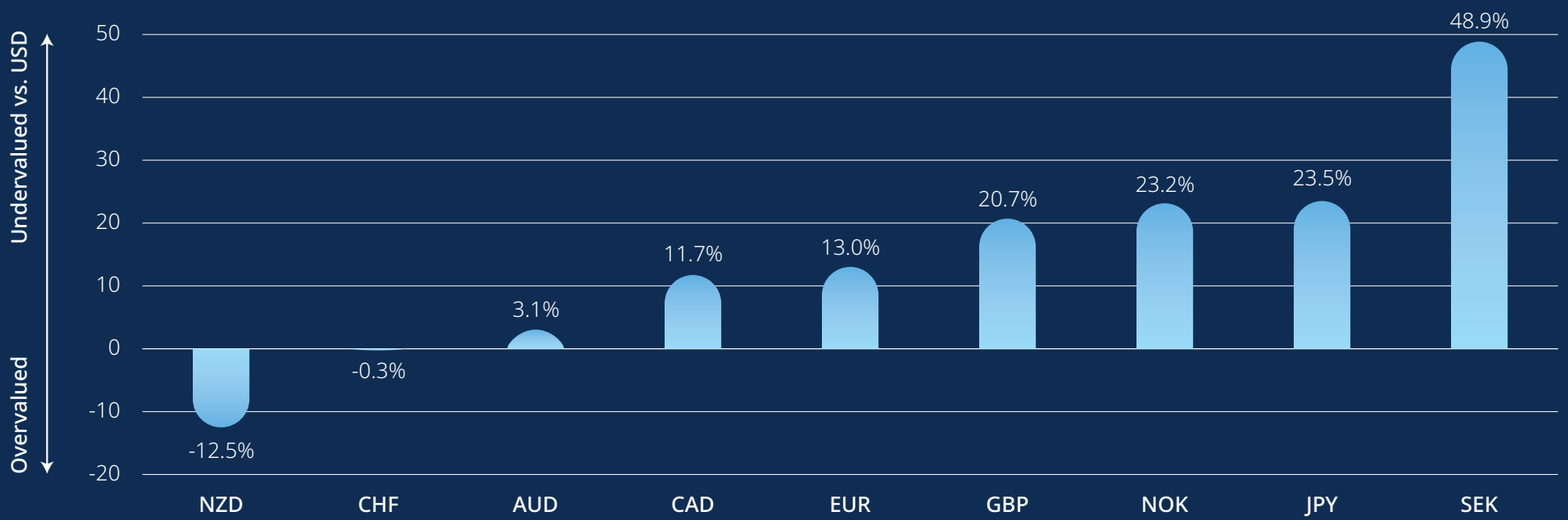
	UK equity	Eur equity	EM equity	Chn equity	US small cap	Cdn small cap	EAFE small cap	EAFE equity	Global infrastructure	US private credit	US private equity	US real estate
UK equity	1.0											
Eur equity	0.7	1.0										
EM equity	0.6	0.6	1.0									
Chn equity	0.3	0.3	0.4	1.0								
US small cap	0.6	0.7	0.7	0.3	1.0							
Cdn small cap	0.6	0.5	0.6	0.3	0.7	1.0						
EAFE small cap	0.7	0.7	0.7	0.3	0.7	0.7	1.0					
EAFE equity	0.8	0.9	0.7	0.3	0.7	0.6	0.8	1.0				
Global infrastructure	0.6	0.6	0.7	0.3	0.7	0.6	0.6	0.7	1.0			
US private credit	0.4	0.5	0.5	0.2	0.5	0.6	0.6	0.5	0.5	1.0		
US private equity	0.6	0.6	0.6	0.3	0.7	0.6	0.7	0.7	0.7	0.5	1.0	
US real estate	0.5	0.5	0.5	0.2	0.7	0.5	0.5	0.6	0.6	0.5	0.5	1.0

Expected monthly annualized volatility and monthly returns correlations. Volatility and correlation assumptions for private assets are de-smoothed, as should be expected if holdings could be marked to market regularly. Observed volatility tends to be much lower.

Key findings

Currency valuations

Among G10 currencies, the New Zealand dollar is the most overvalued, while the Swedish krona is by far the cheapest relative to long-term fair value. Our estimates imply that the US dollar is the most expensive major currency.



These measures of over or undervaluation incorporate four of our assessments of long-term and medium-term currency valuations. We assess valuations based on purchasing power parity, real effective exchange rates, a behavioural, terms-of-trade adjusted currency valuation model, as well as another behavioural model which adjusts balance of payments outcomes based on structural factors.

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Asset allocation views

Asset allocation views

Navigating the cross-currents

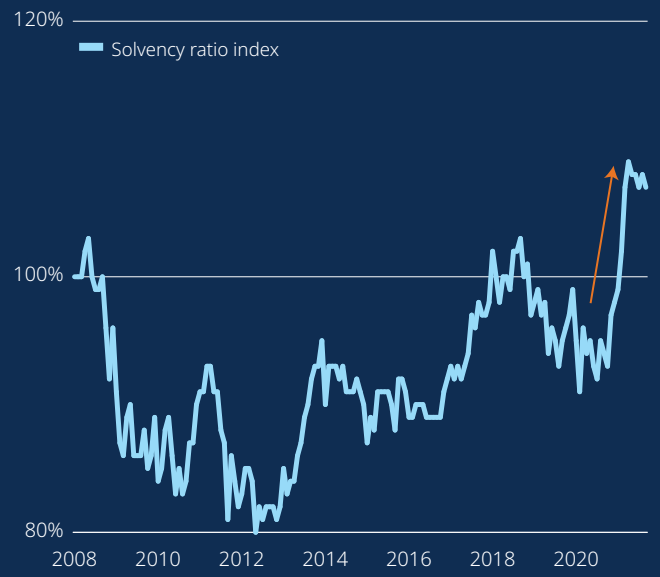
In the last year, the financial position of many institutional investors strengthened significantly with the sharp rebound in asset valuations and rise in long-term bond yields compared to the historic low levels of 2020:

- **Defined benefit (DB) pension plans generally moved into stronger surplus positions from an asset-liability perspective**, supported by robust asset valuations and higher long-term interest rates that reduced actuarial liabilities.[1] The average asset allocation of a DB pension plan gained 8.5% over the last four quarters and around 8% in the last decade.[2]
- **Fund managers for endowments, foundations and defined contribution (DC) pension plans also experienced strong portfolio gains**, supporting their long-term financial capacity to support the future cash flow needs of sponsors and contributors. Based on a simple proxy, such as a CAD-hedged 60/40 mix of world stocks and fixed income, these portfolios gained about 12.9% over the last four quarters and 8.7% in the last 10 years.[3]

With a lower return outlook for many asset classes in the next decade, institutional investors will need to consider adapting their policy portfolios and strategic asset allocations to maintain long-term return targets. Equity market valuations in developed markets, notably large cap US equities, appear richly valued relative to long-term fundamentals. Similarly, corporate credit generally offers modest spreads over government bonds, providing limited compensation to investors despite more heavily levered corporate balance sheets. And while long-term government bond yields have risen from the lows of 2020, they continue to offer negative rates after inflation.

1 The solvency ratio of the median Canadian defined benefit plan have improved over the past decade, according to different estimates by Mercer, Willis Towers Watson and Aon.
2 Returns inferred via data from Mercer and RBC Investor Services.
3 60% MSCI World Total Return index and 40% Bloomberg Barclays Treasury Total Return index.
4 Calculations for the funding risk index by the Multi-Asset Strategies Team, using Canadian wage growth data via the Bank of Canada, duration-adjusted corporate spreads via Bloomberg, and asset mix data via the Pension Investment Association of Canada.

Solvency ratio index for Canadian defined benefit plans[4]
(assuming 2008=100%)



Consequently, achieving a given long-term return target may require many investors to stretch further out the risk-return frontier. Managing the volatility implications will become increasingly important to ensure that portfolios remain consistent with risk tolerance (Capital markets assumptions section). This is especially true in the context of heightened macro risks in the next 5 to 10 years, such as an inflation breakout or growth slowdown (Global macro outlook section).

Portfolio adjustments – Asset allocation

As outlined below, we believe investors have several options to help manage the cross-currents of today's rich asset valuations, lower long-term expected returns and low bond yields. Prudent use of leverage, greater diversification and use of alternatives can control risk – both expected Sharpe ratios and asset-liability surplus ratios – while increasing allocations to return-seeking strategies to achieve long-term return targets:

1 Leverage

- **A prudent increase in total fund leverage** can allow sophisticated investors with strong risk and liquidity management to build more efficient portfolios with a greater chance of realizing long-term objectives. For example, DB pension plans can employ leverage to gain greater exposure to government duration, reducing the mismatch between the risk factors driving asset returns and liability growth. In this way, a plan can reduce interest rate sensitivity and overall 'surplus risk'. At the same time, leverage increases the probability that the DB plan can achieve a sufficiently high long-term return to remain affordable to sponsors and contributors.

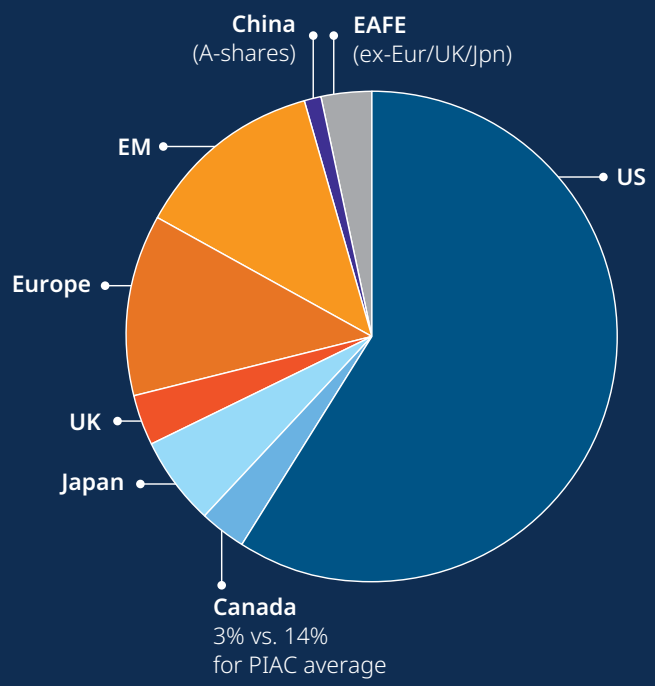
2 Asset allocation

Broadening diversification to different asset classes, geographies, risk factors and currencies can reduce investment risk in the long term.

- Many plans have significant home bias with high allocations to Canadian equities and corporate credit relative to global market capitalization-implied weights. The average Canadian pension plan allocates 14% of its large-cap equities to Canadian stocks, compared to a 3% weight in MSCI's all country world index.

MSCI ACWI country weights via Bloomberg.

MSCI ACWI geographic weights



Asset allocation views

- Similarly, many investors are underweight emerging market (EM) assets in their strategic asset mix relative to market cap weights. In MSCI's All Country index, the EM equity weight is about 13%. The secular growth of China, India and other large emerging economies suggests that this underweight will only increase over time. Chinese stocks listed on mainland exchanges ("A-shares"), make up less than 1% of MSCI's All Country index, but 11% of the "true" global equity market (page 11).
- Home bias and the underweight in EM assets imply sizable active bets, which are not typically measured explicitly because investors generally assess active risk relative to their policy portfolios rather than the global market cap-weighted portfolio. By transitioning equity weights towards global market cap weights over time, this source of active risk can be reallocated to other investment strategies and asset classes offering greater risk-adjusted expected returns.

Tactical tilts relative to the strategic asset allocation can add value and reduce risk. To limit transaction costs and reflect the longer investment horizon of most institutional investors, our current tactical tilt recommendations have an investment horizon of 1 to 2 years.

- **Asset allocation tilts:** An overweight to equities relative to corporate debt and cash is our preferred means to maintain a fund's expected return. Narrow credit spreads and deeply negative bond yields after inflation provide a less attractive risk-reward ratio compared to stock markets, despite their rich valuations. Our base case of low interest rates and robust global growth suggests that equity returns will remain relatively attractive over the next 10 years. An overweight in long-term government bonds also helps to balance equity risk in the asset mix.
- **Relative equity market tilts:** Within a fund's equity sleeve, we recommend an underweight in US and Japanese equities and overweight in EM and UK equities based on today's starting valuations and the stronger global economic outlook. We believe EM and UK stocks are well positioned to benefit from firming commodity prices, attractive starting valuations relative to long-term fundamentals and a broadening of the recovery from developed to global economies following the pandemic-related downturn.
- **Currency tilts:** We recommend a tactical underweight in the US dollar relative to other G-5 major currencies given the dollar's broad over-valuation relative to long-term fundamentals. Macro factors are also expected to weigh on the US dollar over the medium term, including the large underlying federal budget deficit, a widening current account deficit and high debt levels. As the growth impact of exceptional monetary and fiscal stimulus during 2020-2021 begins to fade, we expect the pace of US economic expansion to slow, allowing other countries to catch up with the more advanced stage of the US recovery.

Asset allocation overview

Broad asset classes

	Underweight	Neutral	Overweight
Equities			■
Sovereigns			■
Credit	■		
Cash	■		

Relative equity

	Underweight	Neutral	Overweight
US	■		
Canada			■
Europe		■	
UK			■
Japan	■		
Emerging Markets			■

FX

	Underweight	Neutral	Overweight
USDCAD	■		

Portfolio adjustments – Risk control and leverage

3 Volatility and risk control strategies

Alternatives

Investors can more readily access liquid alternative strategies and asset classes, providing additional tools for asset allocators to control risk while adding new sources of return to the portfolio.

- **Private assets:** Private market assets, such as private equity, private credit, real estate and infrastructure can be attractive tools for asset allocators. First, the periodic valuation of portfolio investments smooths volatility, masking underlying valuations compared to mark-to-market pricing. For DB pension plans, a smoother profile in reported asset valuations reduces the potential need for topping-up payments to boost a plan's financial position, reducing cash flow risk for sponsors and contributors following large drawdowns in public markets (as in September 2008 and March 2020). Second, private assets can better access high-growth sectors since younger and innovative companies increasingly seek private financing over IPO financing in public markets given the regulatory burden. Third, certain private investments, such as infrastructure and real estate, have the potential to enhance a portfolio's inflation sensitivity.
- **Liquid alternative strategies:** Investment strategies in liquid public securities, including derivatives, aim to deliver a target return over the cycle with low correlation to traditional asset classes by taking long and short positions and incorporating leverage. These strategies often depend on the manager's skill in adding value over traditional benchmarks. Successful selection of liquid alternative managers has the potential to control total fund risk while contributing to overall return.

Strategic FX hedging

An often overlooked tool for asset allocators to reduce total fund volatility is their hedging policy for foreign exchange (FX) exposures. Investing in foreign assets often entails unintended FX exposures. Predictable correlations between FX exposures and foreign equity returns can often be exploited to reduce total risk. For Canadian-resident investors, foreign equities tend to trade with the Canadian dollar. Unhedged exposures to reserve currencies, such as the US dollar, can reduce total portfolio risk in Canadian dollar terms.

Portfolio adjustments – Macro risks

4 Robust asset allocation to macro risks

Our baseline outlook for the global economy in 2022 remains constructive with economic growth remaining above its long-term potential and high inflation receding towards central bank targets of 2% by the end of 2024. The rollout of vaccines and enormous policy stimulus from central banks as well as deficit-financed government spending drove the sharp economic recovery in advanced economies this year. We estimate real GDP growth of about 5% and 5.5% in Canada and the US, respectively, in 2021. However, multiple macro risks hang above markets for 2022. On one hand, persistent inflationary pressures this year increase the risk of a policy mistake. Central banks may hike rates too aggressively in 2022 to contain temporary inflationary pressures, resulting in an unexpected **growth slowdown** (see below). Alternatively, hiking policy rates too slowly could allow an overheating economy, financial instability and an **inflation breakout**. On the other hand, the new Omicron Covid variant or the emergence of other potential variants could threaten the ongoing global recovery, by forcing new lockdowns and/or hurting consumer confidence. There is still much uncertainty about the new strain, including around vaccine effectiveness and severity of symptoms. Omicron stretches the already wide range of macro scenarios for 2022 but does not significantly impact our base case.

Strategic asset allocations have varying sensitivities to different economic conditions. In particular, many institutional portfolios have a concentrated exposure to equity factor risk as a means of achieving their long-term return targets. Nominal government bonds generally function as a ballast to portfolio returns, balancing equity risk in times of distressed market conditions. From a macro perspective, equity factor exposures tend to outperform when economic growth is stronger than expected and inflation remains low while government duration exposures tend to outperform with lower-than-expected inflation. In the last four decades, these exposures have delivered strong risk-adjusted returns to investors as inflation declined and growth remained solid. Looking ahead, portfolios with concentrated equity risk may not be resilient to potential future macro regimes, such as a persistent inflation shock or a slowdown in global economic growth. In this context, the stress-testing of strategic asset allocations to future macro risks can highlight excess risk concentrations. In this edition of the Orange Book, we consider two contrasting macro risk scenarios (see page 40).

- **Inflation breakout:** Estimated real returns are negative for major asset classes in the context of high inflation, implying a negative real return for a balanced portfolio. Government nominal bonds incur the greatest declines while the European and Canadian stock markets outperform relative to other equity markets.
- **Growth slowdown:** Nominal government bonds outperform following an unexpected global slowdown while major equity markets generally decline.

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Capital market assumptions

Capital market outlook – Key takeaways

Rich starting valuations and low risk-free interest rates imply lower expected returns for many key asset classes in the next decade compared to average returns in the last 40 years. However, the rise in risk-free interest rates since 2020 has given a lift to forward-looking returns compared to the previous edition of Mackenzie's Orange Book. Our forecasting framework pivots on three key factors: risk-free interest rates, the asset class risk premium and an active return that depends mainly on starting valuations and macro conditions (see page 18). Expected returns are hedged back into Canadian dollars to distinguish between currency and local asset returns.

We treat 10-year government bond yields as the risk-free asset in line with the long-term horizon of our institutional investors. Many investors expect 10-year yields to rise sharply given current inflationary pressures, an expected broadening of the global economic recovery and tightening liquidity conditions by major central banks in 2022-23. However, investors have systematically over-predicted rising bond yields since the 1990s (see page 25) even as secular declines in inflation and real yields continued virtually unabated. These declines reflect secular macro forces, including the global savings glut, demographic aging and falling productivity that have weakened demand and lowered the real return of capital. In this context, our forecast for 10-year government bonds is based on current yields, the risk premiums implied by current term spreads and our active view on relative government bond markets. This framework implies an average expected nominal return for a **constant maturity 10-year government bond** of about 2% in Canadian dollar terms over the next decade. Higher yielding bonds, such as **China government bonds**, lose much of their yield advantage after FX hedging. However, partially unhedged exposures could be attractive for investors with a positive active view of the RMB.

For public market equities, the impressive rally has narrowed risk premiums sharply compared to the distressed market conditions of early 2020. Vaccinations have allowed for an economic re-opening in most advanced economies as unprecedented policy stimulus boosted private sector incomes and spending. With low risk-free interest rates and a rebound in expected growth, equity market valuations in major markets surged. However, based on Shiller's cyclically-adjusted price-earnings ratio, US equity valuations have not reached such expensive levels since the dot-com era (see page 23). Despite rich valuations compared to history, we expect solid average returns over the next decade as risk-free rates remain lower for longer and the global economic recovery broadens, even if the path could be more choppy due to heightened macro risks (Global macro outlook section).

Regional stock market outlooks:

- We expect the most over-valued equity markets, such as **US and Japanese stocks**, to return about 6.5% in the next decade in Canadian dollar terms.
- In contrast, **EM and China stocks** offer higher return prospects of about 8.8%, reflecting attractive starting valuations and favorable positioning to benefit from a broader global economic recovery. However, the EM and China markets also have higher expected volatility compared to markets in the advanced economies.
- The **UK stock market**, which has a high exposure to resources, shares an attractive starting valuation and is well-positioned to benefit from firming resource prices compared to the technology-heavy US stock market.
- **Equity style returns**, such as US growth and value, have been volatile as reflation trades dominated in early 2021, providing a boost to value stocks, but later in the year giving way to a renewed rally in growth stocks. The volatility in relative style returns is likely to persist as the near-term outlook oscillates between reflation (i.e., strong growth with high inflation) and a mid-cycle slowdown (i.e., moderating growth as policy stimulus fades and easing inflation). For this reason, we suggest remaining close to core equity exposures in a strategic asset allocation.

Capital market assumptions

In the credit space, expected returns in the next decade range between 2.9% for US Investment Grade debt and 5.3% for EM dollar debt. Credit currently offers a low spread over risk-free government bonds of similar maturity. At this early stage of the economic recovery, we would expect higher credit spreads, much like the recovery from the 2008 Global Financial Crisis. Corporate balance sheets are also more levered today as borrowers took advantage of historically low rates, and recognizing the active backstopping of the US corporate bond market by the Fed and Treasury. We think of credit in terms of underlying risk factor exposures, which typically includes a diversifying mix of government bond duration and equity factor risk that boosts the expected risk-adjusted expected return. However, we believe that a more optimal mix of government bonds and equity market securities can generate a superior risk-adjusted expected return for investors (see page 27).

Private assets continue gaining popularity with asset allocators (see page 28**)**. Private asset classes offers an illiquidity premium to compensate investors for locking up funds for an extended period. For investors with ample liquidity and long-term horizons, the illiquidity premium offers an additional source of excess return. However, the flood of capital entering the private asset space has likely narrowed the illiquidity premium compared to earlier decades. Other advantages remain, including the inflation sensitivity of the collateral value from holding real assets, such as **real estate** and **infrastructure**. Cash flows linked to these assets can also be inflation-indexed. We expect US real estate and global infrastructure returns (unlevered) of 4.3% and 6.5%, respectively. Leveraged **private credit** competes with public equities with an expected return of 6.7% but with a lower correlation, providing diversification benefits. **Private equity** with an attractive expected return of 7.9% also offers an opportunity access an under-represented part of the capital market in public markets.

The over-valued US dollar is expected to weaken in the next decade against a basket of major developed currencies (see page 29)**.** Portfolio flows were attracted to the relative safety and liquidity of US financial markets in early 2020. Since that time, portfolio flows have steadily reversed course to non-US markets in search of higher expected returns as the global economy recovers. We expect the modestly under-valued Canadian dollar to strengthen further towards its long-term fair value of around US $0.835, especially if commodity and energy prices continue firming and the Bank of Canada tightens liquidity conditions ahead of the Fed as we anticipate.

The flood of capital entering the private asset space has likely narrowed the illiquidity premium compared to earlier decades. Other advantages remain, including the inflation sensitivity of the collateral value from holding real assets, such as real estate and infrastructure

Methodology

Public asset classes

Long-term expected asset return = **Excess return** + **Risk-free rate**

Excess return = **Active return** + **Risk premium**

Risk-free rates are determined from the current yield curve and reflects the central bank's policy interest rate, expected inflation and growth.

Excess returns compensate investors for bearing risk and can vary as investors' risk appetite fluctuates with economic and financial conditions.

Risk premiums represent a systematic source of excess return linked to the asset class volatility and its correlation to the global capital market portfolio.

Expected active returns are expected shifts in the asset return from its long-term risk premium. Expected active returns reflect proprietary insights about valuation, macro conditions and investor sentiment.

Private asset classes

Long-term expected asset return = **Yield** + **Growth rate** + **Leverage** + **Illiquidity premium** − **Fees**

Yields are measures of the ex-ante cash-flow return to an investor. We use a mix of private asset ratios and public market yields as a proxy.

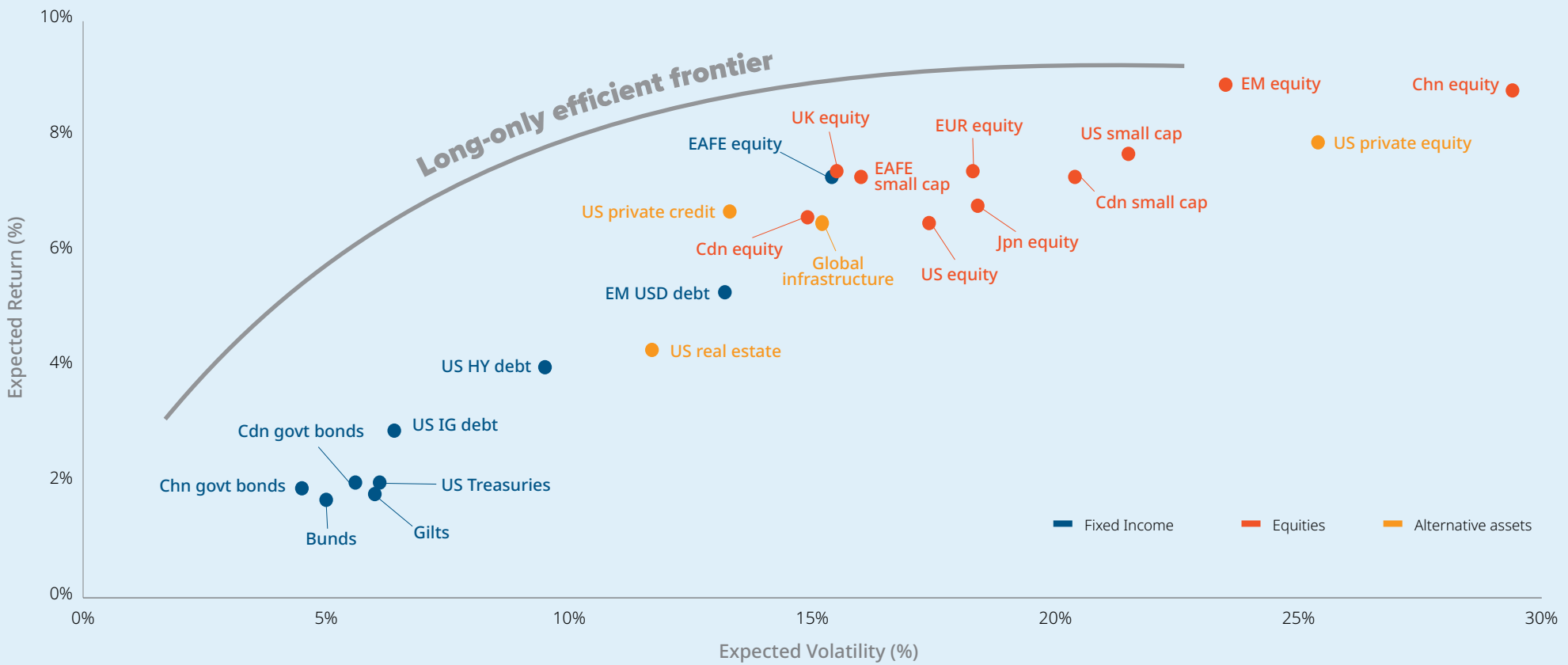
Growth rates of underlying earnings are determined by long-term economic growth and expected inflation, adjusted for asset class characteristics.

Leverage accounts for the use of debt on returns, taking into account borrowing costs. Private equity and private credit both typically employ leverage. We exclude leverage in the estimated returns for real estate and infrastructure.

Illiquidity premiums compensate investors for locking up capital into an illiquid asset. In times of market turmoil, private assets tend to be harder to liquidate. The evidence for the existence of illiquidity premiums varies by asset class.

Fees can make up a significant share of private asset returns. We consider both flat historical fees and forward-looking performance fees in our calculations.

10-year expected returns vs. volatility



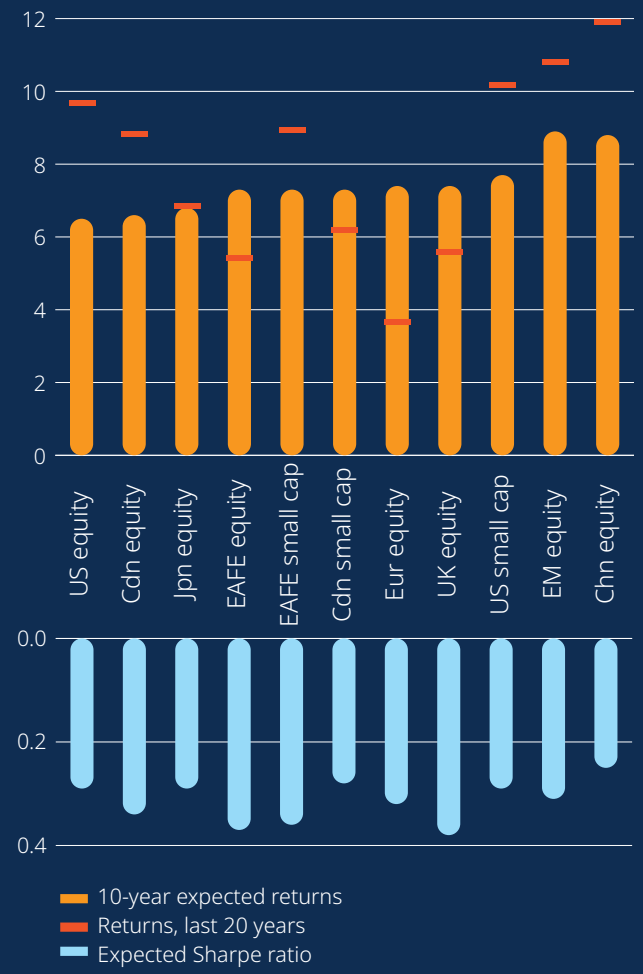
Expected geometric returns are shown on a nominal basis, before fees for all asset classes, except for the private asset classes. These are contrasted with each asset's expected monthly annualized volatility.

Public equities – Returns

- **US large cap equities** appear overvalued relative to other major stock markets following over a decade of outperformance driven by expanding profit margins and dwindling interest rates that flattered the value of future expected earnings of the large technology and other 'growth' sectors.
- **EAFE equities** underperformed global equities over the past 20 years, dragged down in part by the weak performance of European stocks amid the European debt crisis. The secular stagnation of the post-GFC period also lead to underperformance given the overexposure of the EAFE index to banks and energy companies. Within the EAFE space, UK equities have particularly attractive valuations, but are sensitive to global demand for commodities.
- **EM stocks** are attractively valued after a decade of underperformance driven by the energy price crash, the Chinese growth slowdown in the mid-2010s and USD strength. EM indices also benefit from natural geographic diversification, generating high expected returns compared to other high-volatility asset classes. MSCI EM, as a USD-denominated index, should also benefit from the current overvaluation of the US dollar.
- **Chinese equities** can contribute to portfolio diversification given relatively low correlations to developed market equities. But Chinese risk assets also have structurally lower Sharpe ratios in part because of idiosyncratic risk factors that may not be well compensated. Hence, we believe that active management is especially important in Chinese stocks.

Notes: Expected 10-year annual geometric returns are shown on a nominal basis, before fees for all asset classes. Past geometric total returns calculated with data via Bloomberg.

Expected vs. historical returns

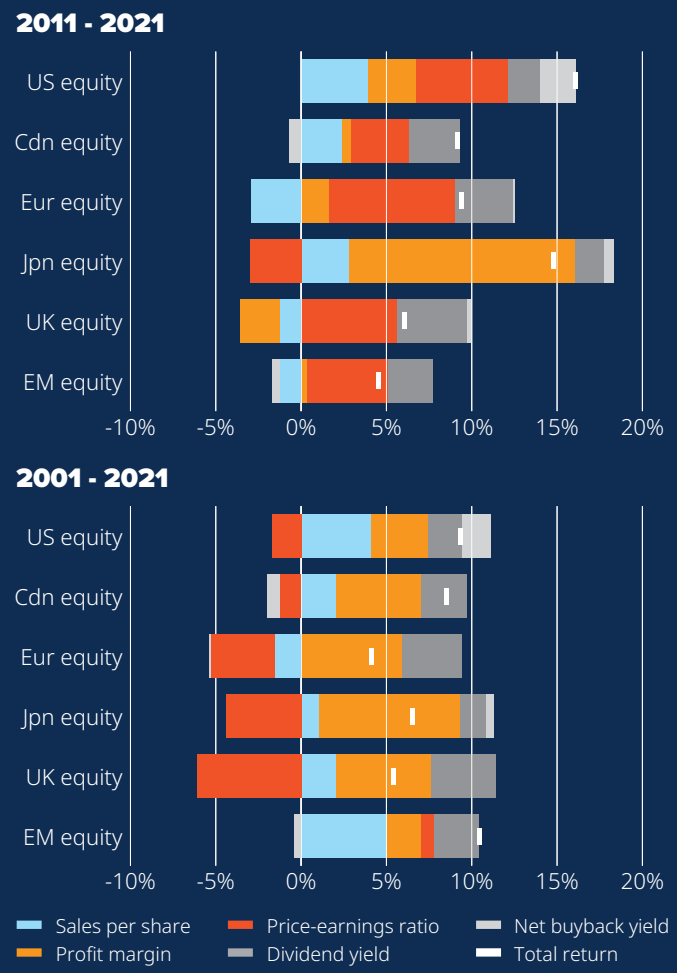


Public equities – Contribution to returns

- **For most markets**, multiple expansion in the price-to-earnings (PE) ratio was the main contributor to returns in the last 10 years (top chart), except Japanese equities. Global economic growth slowed and long-term interest rates fell sharply, putting a premium on future earnings. But the picture differs over a 20-year window (bottom chart). Starting from a period of elevated valuations in the early 2000s, compression in PE multiples generally detracted from total return in most markets, including in the US. Over even longer historical periods, PE multiple expansion tends to be less important to long-term stock returns than fundamental drivers.
- **US equities** are often seen as generating relatively low dividend distributions to investors. That is true when looking strictly at dividends: US dividend yields have averaged 2.0% over the last 20 years, compared to 3.5% in Europe and 2.7% in Canada. But US buyback-augmented yields are higher, averaging 3.7% over the same period.
- **Emerging market equities** typically promise solid revenue growth in line with their higher long-term growth trajectories. But in the last 10 years, the return profile of EM stocks differed from that over the previous 20 years: slowing global growth implied that the sales-per-share component detracted from EM equity returns. In addition, given MSCI EM is a USD-denominated index, dollar strength in the latter half of 2020 depressed dollar-denominated revenues.
- **Profit margins** are at 25-year highs for US and Japan equities. This phenomenon is not a quirk of large cap stocks: after a long upward trend, aggregate corporate profit ratios are near all-time highs in the US and Japanese economies, even more so when excluding financial firms.

Notes: Data via Bloomberg, decomposition by the Multi-Asset Strategies Team. 2021Q3 is the last observation.

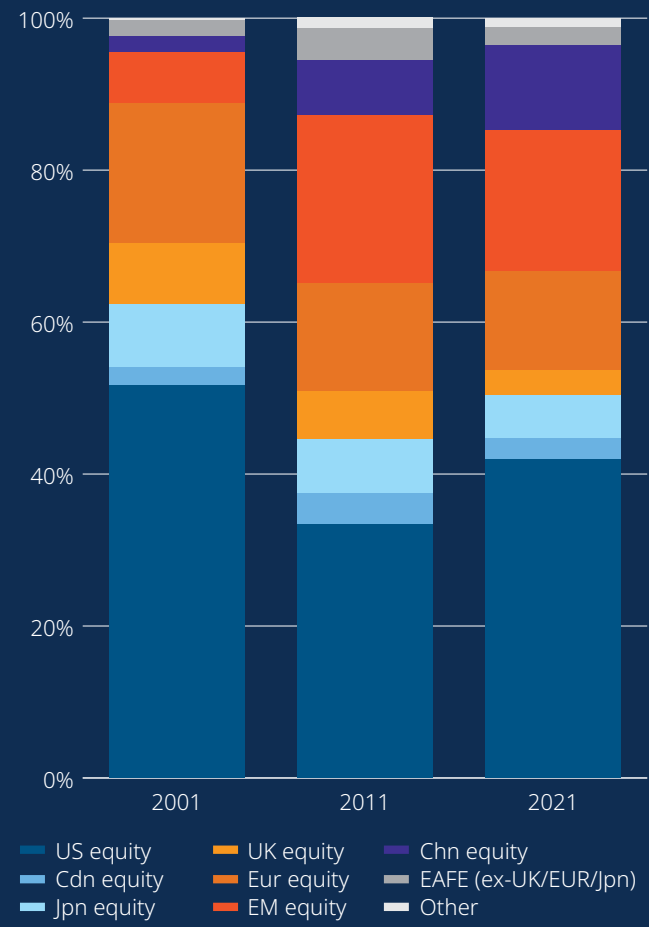
Contributions to realized returns
(annualized geometric returns)



Public equities – Market weights

- **Country and regional weights** in the market cap-weighted global equity portfolio have varied significantly over time reflecting relative gains in equity market values, trends in new listings and net share issuance.
- **US-listed stocks** make up 42% of the global publicly-listed equity market following 10 years of strong performance according to data from the World Federation of Exchanges. This share is up from 33% ten years ago, but well below the 51% it reached around the turn of the millennium.
- **UK equities** have contracted the most of all major stock markets in the past 10 years relative to its initial weight. 'Brexit' likely slowed new net share issuance, and relatively low returns dinged companies' market caps, in part due to slumping world commodity prices. While we expect relatively high returns for UK stocks in the next decade, their small weight may limit the size of active tilts in many portfolios.
- **Chinese stocks** as a share of the global equity market have grown steadily in the past 20 years, rising from 2% in 2001 to 11% today. Investors outside of China typically hold a lower share of their equity portfolios in Chinese equities relative to market cap-implied weights due to historical restrictions and ongoing limits on foreign ownership. In fact, the weight of Chinese stocks in the MSCI ACWI global equity benchmark is only 4%. As Chinese equity markets continue opening up over time, this weight is expected to rise further.

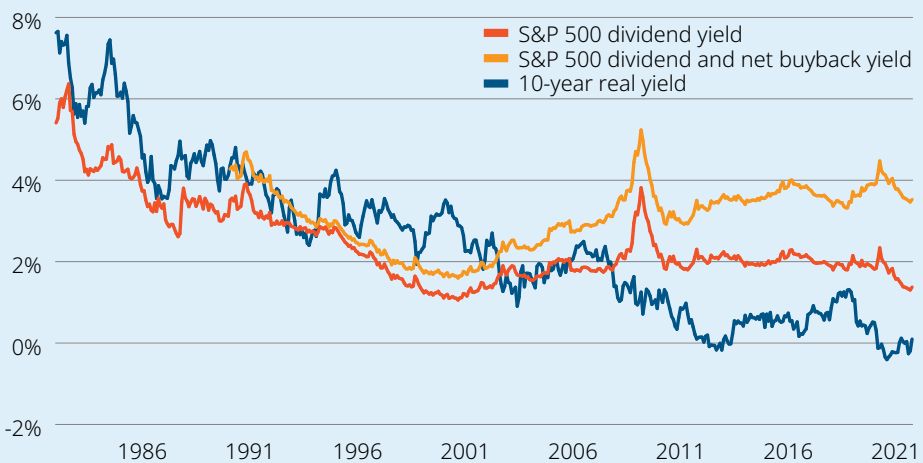
Shifting composition of global equity markets (country/region share of global public equity market)



Notes: World Federation of Exchanges, Bloomberg, MSCI. The EM equity category excludes stocks listed on Chinese mainland exchanges, which are included in "Chn equity".

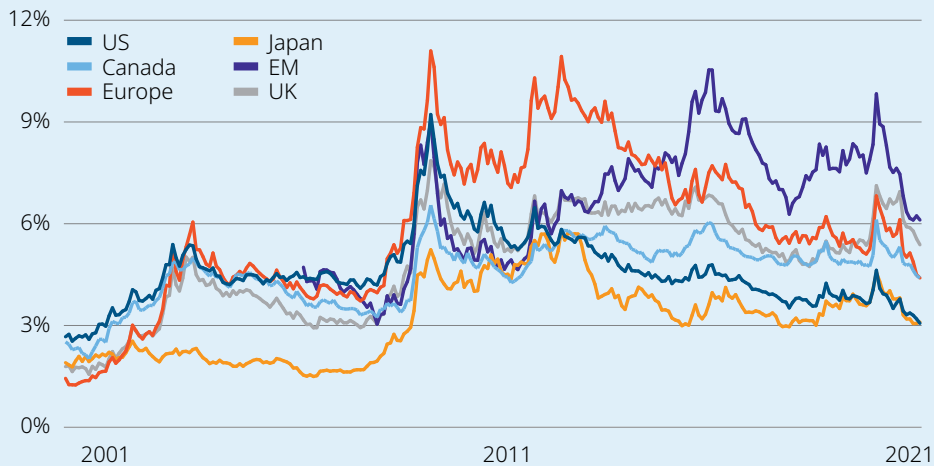
Public equities – Current valuations

Equities are expensive relative to history but share buybacks and low risk-free yields after inflation give a more nuanced picture



EM equities are particularly cheap

(Shiller's cyclically-adjusted earnings yield)



- Between 1982 and 2008, lower real risk-free yields corresponded to higher valuations for US equities based on dividend yields.
- After 2008, real yields continued falling while buyback-augmented dividend yields remained stable, suggesting equity valuations are more attractive than some metrics suggest.
- Shiller's cyclically-adjusted earnings yield is far from a perfect valuation indicator. However, markets with relatively low long-term yields have reliably forecast lower long-term average returns.
- US equities are expensive relative to other equity markets, which partly explains their lower expected returns. At the other end of the spectrum, emerging market equities are relatively cheap.

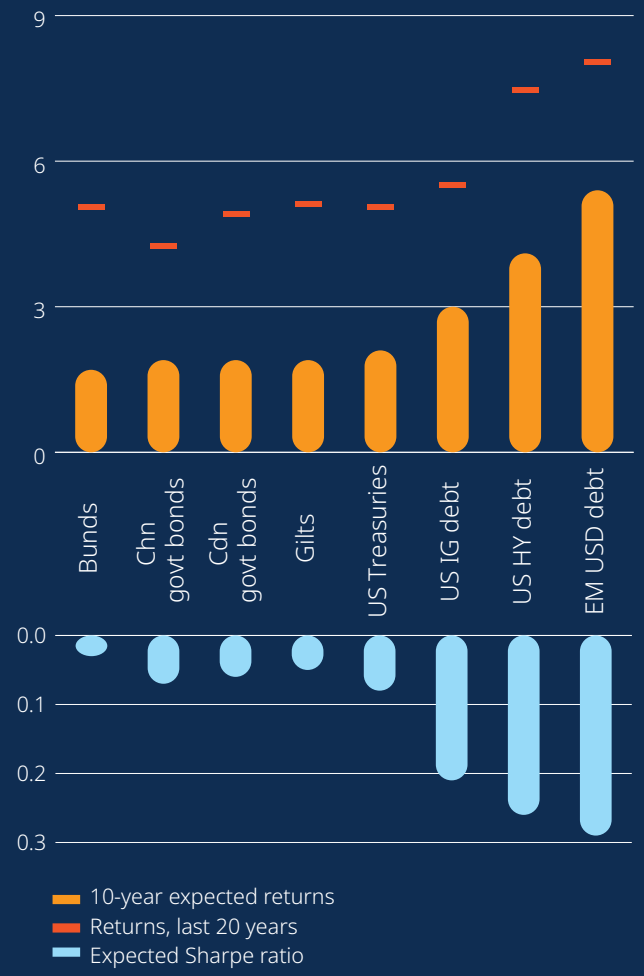
Notes: Data via Bloomberg and the Cleveland Fed. The net buyback yield is computed with a 10-year rolling window, following Shiller's CAPE methodology. CAEY divides the 10-year average of real earnings by the current real index price.

Fixed income – Returns

- **Realized returns** in the last 20 years were exceptional for fixed income as the steady decline in inflation and interest rates bolstered nominal bonds. And, outside of the Great Financial Crisis in 2008, default rates for corporate bonds were generally low compared to history. After the emerging market crises in the 1990s, emerging market debt registered lower losses in the 2000s and 2010s in line with improved EM macro fundamentals.
- **Expected returns** going forward are lower compared to past decades. Downward pressures remain on long-term government bond yields, including global population aging, sluggish productivity growth and inequality. An expected moderation in inflationary pressures should also keep long-term interest rates subdued in the medium term. Over the next 10 years, we anticipate sovereign bond returns broadly in line with current yields with a slight excess return mirroring the expected roll-down premium from holding a constant-maturity bond allocation.
- **Chinese government bonds** offer attractive yields in local currency compared to comparable bonds in advanced economies. However, currency hedging costs limit the carry advantage. As a result, the expected returns after FX hedging look broadly in line with yields in many advanced economies.
- **Corporate spreads** are near historical lows in the US, Canada, and Europe. Expected returns for investment-grade and high-yield corporate bonds exceed those of sovereigns, reflecting their exposure to the equity risk factor through default and credit rating risks. But their risk-return profile is generally unattractive, as they exhibit lower Sharpe ratios than risk-adjusted bundles of sovereign bonds and stocks.

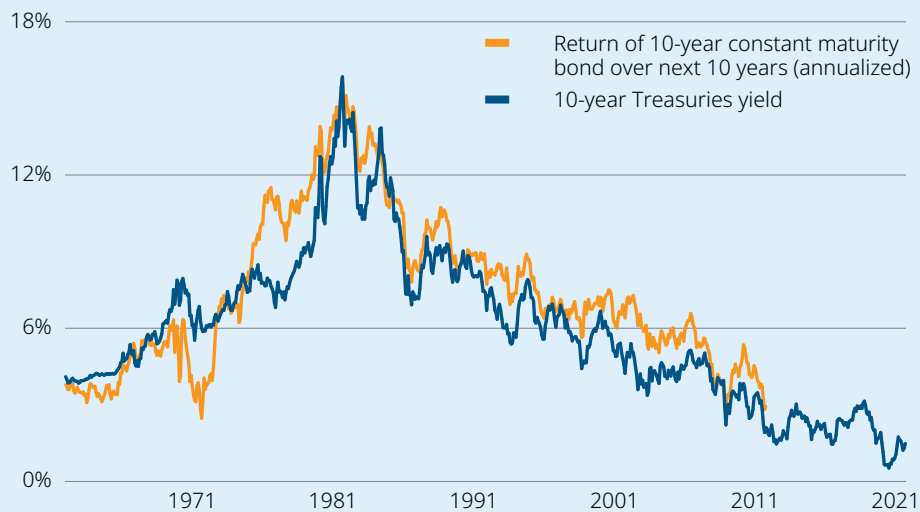
Notes: Expected 10-year annual geometric returns are shown on a nominal basis, before fees for all asset classes. Past geometric total returns calculated with data via Bloomberg.

Expected vs. historical returns

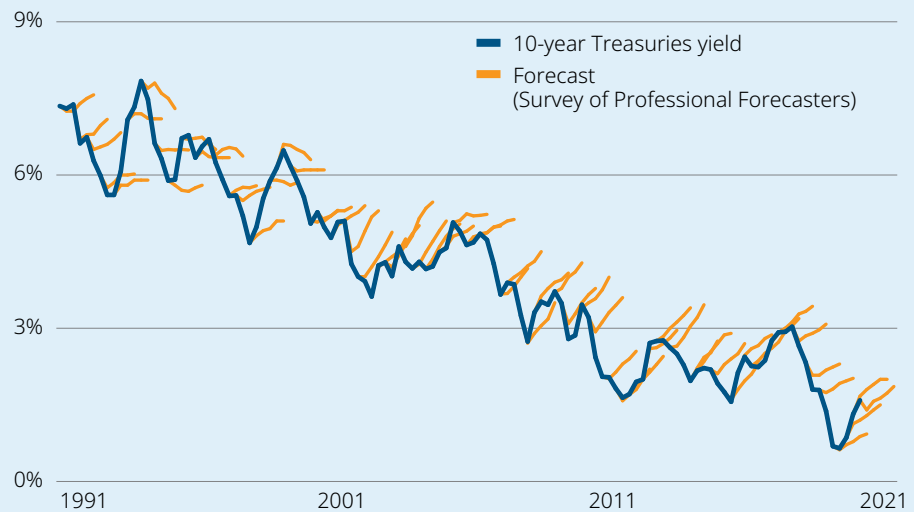


Fixed income – Sovereign yields

Over a 10-year horizon, yields are strong predictors of long-term expected returns



Persistent upside bias in yield forecasts, especially since 2000



- Over the past 40 years, realized returns were higher than starting period yields for constant maturity bonds due to positive roll returns given declining interest rates. But even with this striking secular trend, starting period yields were good predictors of 10-year returns.
- Participants in the Fed's Survey of Professional Forecasters systematically overestimated future 10-year Treasuries yields in past decades.
- Anchoring to historical yields or over-estimating the neutral interest rate can lead to asset allocation errors. Over the past 20 years, underweighting government bond duration not only implied lower returns, but also robbed investors of the diversifying power of long-maturity sovereigns in multi-asset portfolios.

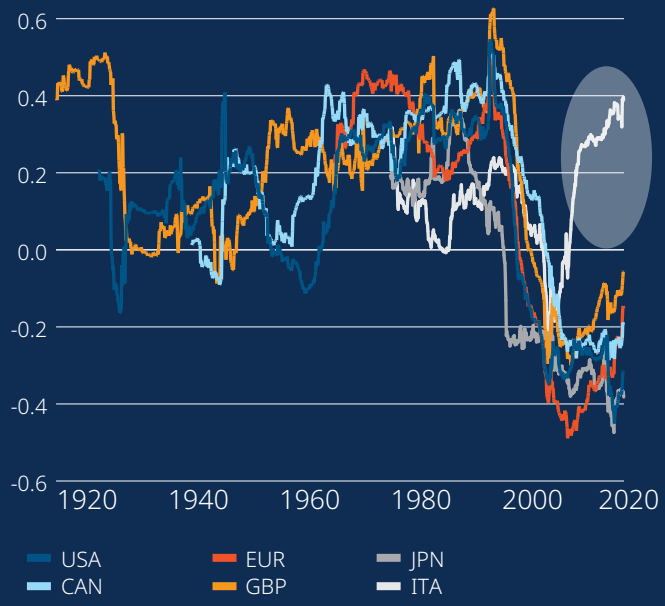
Notes: Left: Data via Bloomberg. Right: 10-year yield forecast from the Survey of Professional Forecasters.

Fixed income – Stock-bond correlations

- **In the past 20 years, "risk-free" sovereign bonds have boasted strikingly low correlations to their local equity markets.** Pension funds following "liability-aware" strategies were rewarded for adding greater interest rate sensitivity in their asset mix, despite concerns about low yields. The resulting duration overweight contributed to total portfolio risk-adjusted returns.
- **Going forward, we expect stock-bond correlations to be less negative than during the disinflationary 2010s.** As inflationary pressures ease, global supply chains adjust, and the global economy reverts to a demand-constrained state, we expect negative macro shocks that will be generally disinflationary.
- **Italian government bonds, the 6th largest sovereign bond market in the world, were the exception as stock-bonds correlations increased in the 2010s** (see circle in chart). After the Eurozone debt crisis, monthly stock-bond correlations ballooned to above 0.3, which was higher than in the 1990s. This case shows that how a default risk premium added to equilibrium "risk-free" rates can change the diversifying properties of bonds to equities.
- **More elevated sovereign default risk premiums in other advanced economies remains a limited risk at this stage.** Public debt deteriorated sharply in many advanced countries during the pandemic, but we don't expect bond markets to start pricing-in a material default risk premium. Public debt loads appear sustainable in the long term with lower-for-longer interest rates and solid long-term growth. Many advanced economies can also avoid an outright sovereign default because debts are issued mainly in local currency. While Germany technically does not have this capacity, its public finances are in a relatively healthier state with total government debt at 70% of GDP.

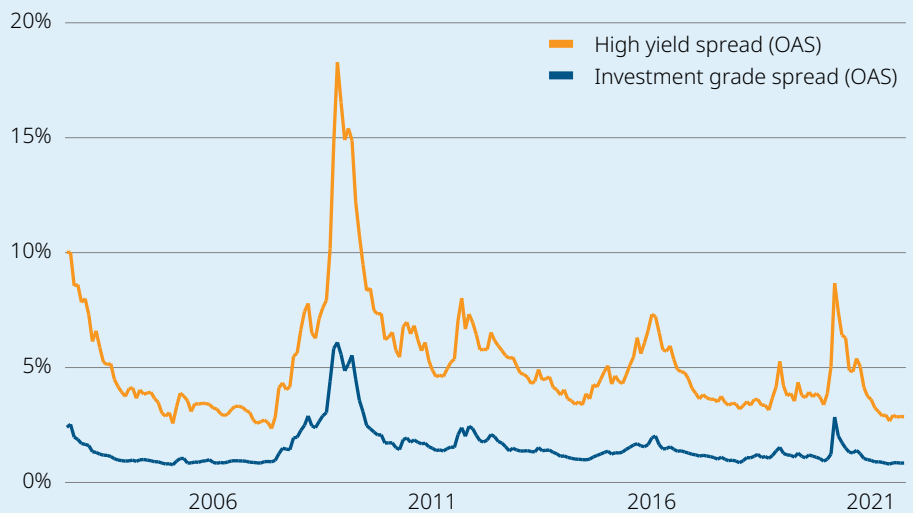
Notes: Data via Bloomberg, Global Financial Data. Calculations use 10-year constant maturity bonds. "Europe" shows the correlation of German bund returns with the Eurostoxx index. Size of sovereign bond markets via Bank of International Settlements.

10-year rolling correlations of local sovereign bond and equity market returns

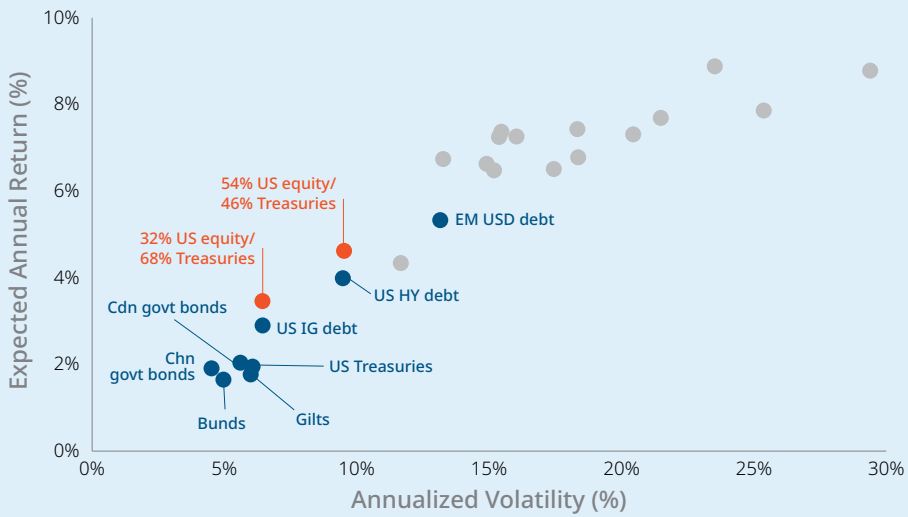


Fixed income – Corporate bonds

Corporate spreads are near historical lows despite more levered corporate balance sheets



Corporate bonds are less attractive than a combination of stocks and sovereigns with equivalent volatility



- Both investment-grade and high yield spreads are at the 5th percentile of their distribution since 2003. Considering nonfinancial corporate debt grew 11% last year, the second highest reading since 1960, and with a tightening of financial conditions potentially around the corner in the US, current low default rates may not persist.

- While corporate bonds have a higher expected Sharpe ratio than sovereign bonds over the next 10 years, the risk-return profile largely reflects their construction as diversifying exposures to equity and government duration risk factors. We expect a volatility-adjusted portfolio of US equities and sovereign bonds would outperform in the long term.

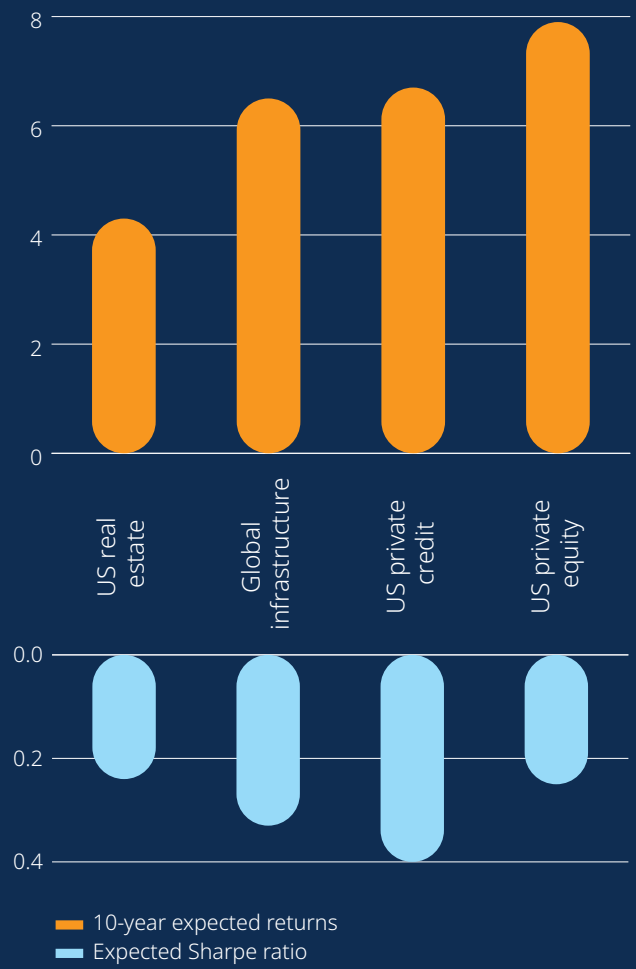
Notes: Left chart: Expected 10-year annual geometric returns are shown on a nominal basis, before fees for all asset classes, except for the private asset classes. Right: Data via Bloomberg.

Alternative assets – Expected returns

- **Real estate** has strong long-run expected returns relative to the smoothed volatility of appraisal-based indices. Based on a public market proxy, our estimate of underlying mark-to-market volatility of core US real estate is twice as high as appraisal-based indices. Over the next 10 years, we expect unlevered US core real estate to deliver returns mirroring those of high-yield bonds, with which it shares a sizable equity factor risk exposure. Real estate may also provide limited inflation sensitivity, making it a useful asset class for investors seeking to add exposure to an inflation factor.
- **Infrastructure assets** have a high equity beta component, which is an important risk factor driving long-term expected returns. Infrastructure also offers higher cash flow yields versus equities with payout ratios close to 100% in many cases. Its attractive risk-return profile reflects the global nature of our infrastructure benchmark and the implicit diversification that multi-country exposures offer.
- **Private credit** funds provide loans to mid-market firms with credit ratings similar to public companies in high-yield corporate bond indices. The loans are typically floating rate, leading to a lower correlation with government bonds. We assume a 2x leverage ratio as is common in many fund structures.
- **Private equity's** risk-return profile is similar to levered small cap equity exposure, which accounts for high historical and expected returns. Low current yields suggest that private equity funds will deliver returns below the recent historical average, although valuations still tend to be cheaper relative to large cap US stocks.

Notes: Expected 10-year annual geometric returns are shown on a nominal basis, after fees for private assets. The four private asset classes are US core real estate (unlevered), Global infrastructure equity (unlevered), private equity (90% debt-equity), private credit fund (floating rate, 2x leverage). Volatility assumptions (and derived Sharpe ratios) for private assets are de-smoothed, as should be expected if holdings could be marked to market regularly. Observed volatility tends to be much lower.

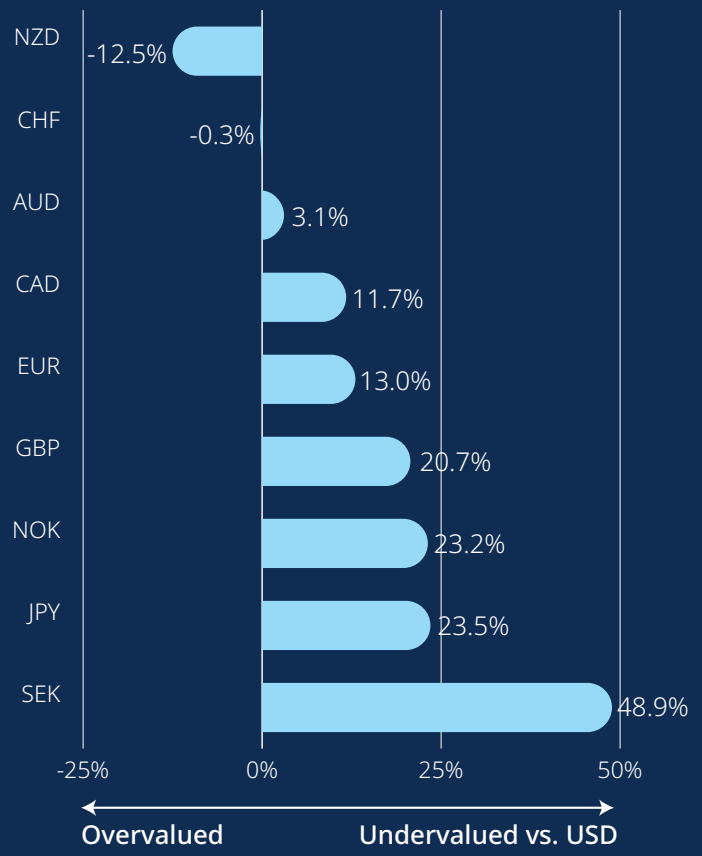
Expected returns for selected private assets



Currencies – Mis-valuations

- **Mis-valuations relative to fundamental estimates of long-term fair value** drive expected returns from currency. Over a shorter cyclical horizon, macro conditions and changes in investor sentiment are also important factors influencing currency movements. But over a 10-year time period, the mis-valuations relative to fair value dominate these factors. In the very long term, we would not expect the currencies of advanced economies to provide excess returns. However, they can be a powerful tool for active managers and asset allocators to reduce total fund risk.
- **The US dollar is overvalued vs. most currencies in the G10 universe.** Only the New Zealand dollar and Swiss Franc are more expensive relative to economic fundamentals. While capital flows were attracted to US financial markets during March-April 2020 in a flight to the safety and liquidity of US securities, flows have been steadily reversing back to non-US markets in search of higher expected returns as the global economy recovers. In our view, the Federal Reserve is generally more dovish than the typical G10 central bank, which should keep USD carry opportunities from driving the dollar higher in the next few years.
- **We expect the Canadian dollar to gain vs. the US dollar.** Widening rate differentials and elevated commodity prices leave room for CAD to converge towards its fair value vs. USD. In general, commodity currencies are below their value from past periods of similarly elevated commodity prices, such as 2007 and 2011.
- **Out of all G10 currencies, the Swedish krona is by far the cheapest relative to long-term fair value.** In the shorter term, SEK benefits from solid macro momentum: the Swedish economy is recovering fast, boasting a high Purchasing Managers' Index and solid recent GDP prints. This should provide a tail wind for SEK to converge towards fair value.

Currency valuations
(relative to USD)



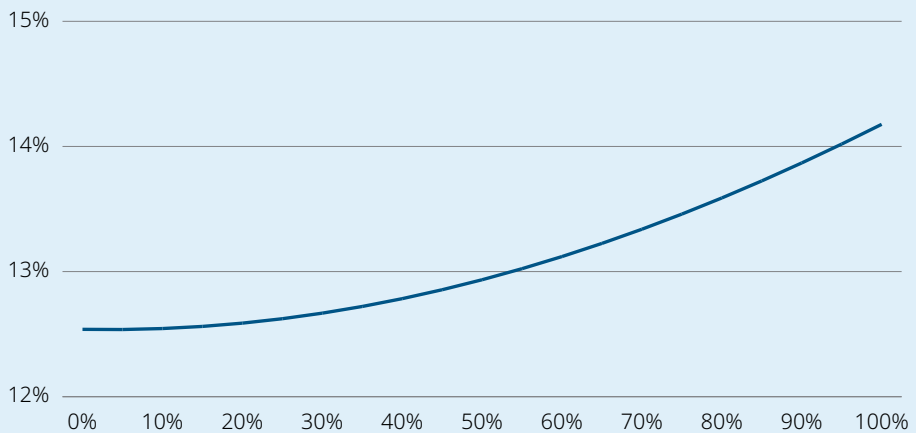
These measures of over or undervaluation incorporate four of our assessments of long-term and medium-term currency valuations. We assess valuations based on purchasing power parity, real effective exchange rates, a behavioral, terms-of-trade adjusted currency valuation model as well as another behavioral model which adjusts balance of payments outcomes based on structural factors.

Currencies – Optimal strategic hedging

Optimal currency hedging can depend on the investment horizon

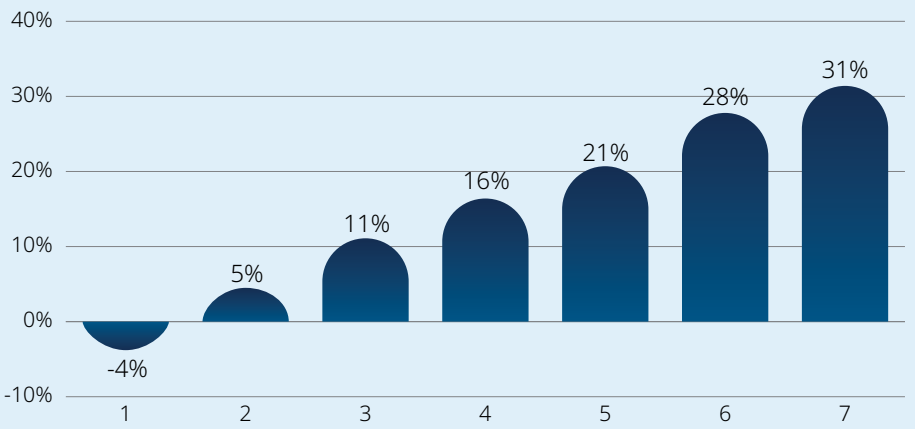
Volatility of MSCI World Index based on different FX hedge ratios for Canadian investors

(based on monthly data)



% of portfolio risk due to currencies at various measurement horizons

(Canadian investor in unhedged international equity)



Currency hedging decisions can impact the volatility of a diversified global equity portfolio for Canadian-resident investors. Historically, a low hedge ratio for the US dollar (below 30%) has tended to minimize total risk of a foreign equity portfolio.

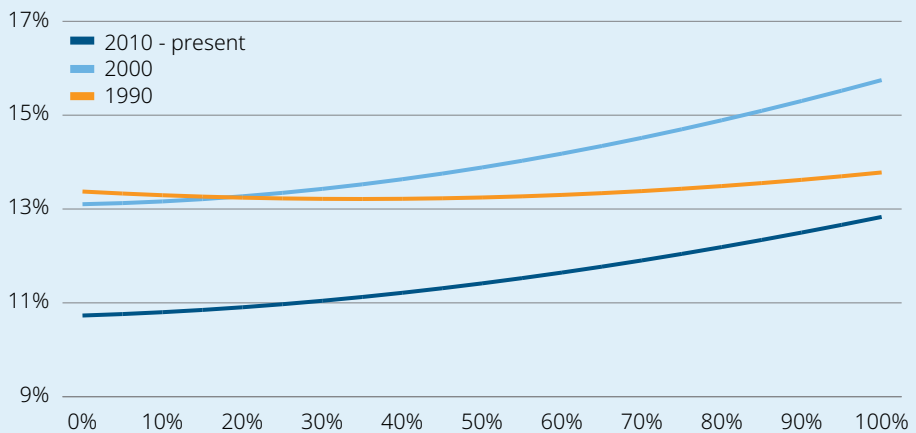
However, the optimal FX hedge ratio may depend on the horizon. Over a two-to-seven-year measurement horizon, an unhedged portfolio had greater risk than a hedged one. For investors with short investment horizons, an unhedged portfolio is optimal, while partial hedging can be risk-reducing for investors with longer investment horizons.

Notes: Calculations by the Multi-Asset Strategies team.

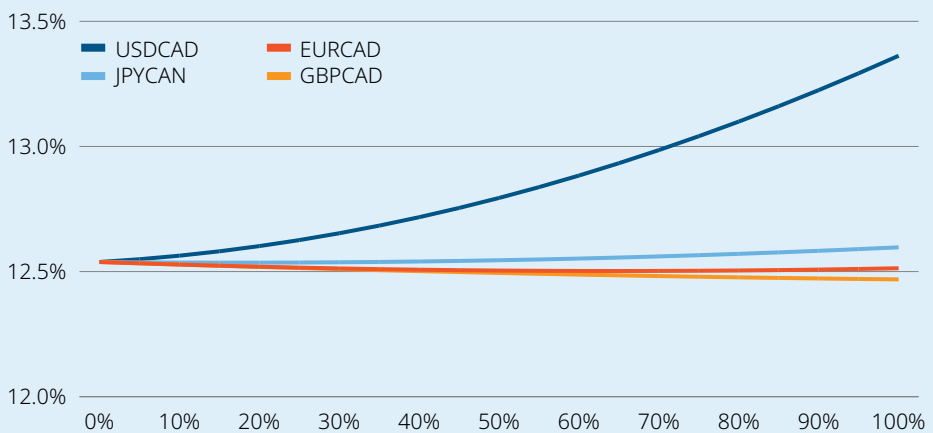
Currencies – Dynamic FX hedging

Optimal currency hedging decisions may need to change through time and depend on currency-specific factors

Volatility of MSCI World Index for Canadian investor, based of different FX hedge ratios, by decade



Volatility of MSCI World Index based on different FX hedge ratios for Canadian investors using monthly returns data (G5 currencies), 1990-2020



Optimal currency hedging decisions have evolved through time, as correlation regimes change. Currency correlations have differed by decade as macroeconomic conditions in certain countries evolved over time.

The optimal currency hedge ratio also depends on the specific currency being hedged, as each currency brings different risk characteristics to a portfolio.

Notes: Calculations by the Multi-Asset Strategies team.

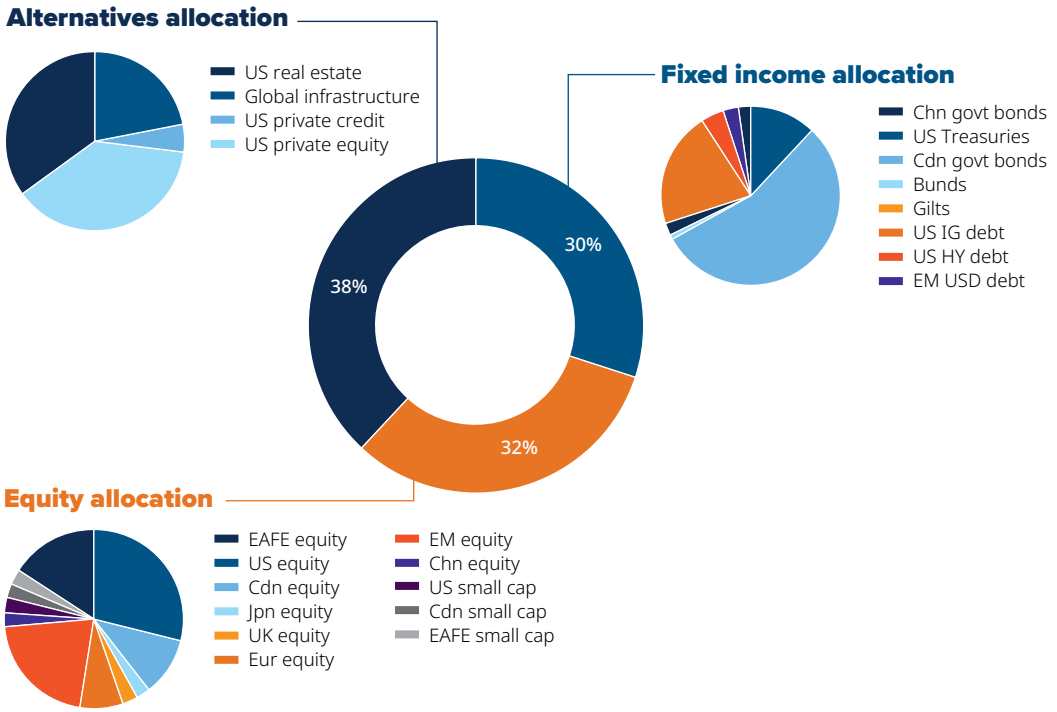
MACKENZIE
Investments

Pension fund allocation

Pension fund allocation

Canadian pension plan portfolio

Portfolio weights of the average Canadian defined benefit pension plan



Benchmark pension portfolio, shown in capital space, constructed by the Multi-Asset Strategies Team using our universe of asset classes, based on the Pension Investment Association of Canada's (PIAC) report on average Canadian pension plan holdings. Source: Liability duration from https://www.morneaushepell.com/ca-en/insights/tracking-funded-status-pension-plans-september-30-2020.

Pension plans face three key risks in funding long-term liabilities including:

- Short duration because of a mismatch between the risk factors driving asset returns and liability growth
- Concentrated equity risk on the asset side
- Currency risk

Pension plans have transitioned their strategic asset allocations to manage these risks:

- Higher allocations to alternative assets
- Lower allocations to public market equities
- Greater diversification within asset class categories
- Leverage to increase interest rate sensitivity, balancing portfolio exposures while improving risk-adjusted expected returns and asset-liability surplus risk

The average DB pension plan also maintains a significant allocation to liquid fixed income securities

- A liquidity buffer provides room for covering capital calls from private asset managers, FX hedges and rebalancing
- However, modest leverage limits room to extend interest rate sensitivity

60/40 vs. PIAC average

- **The 60/40 asset allocation of global stocks and fixed income is a common benchmark to assess a portfolio's investment and asset-liability (A/L) characteristics.** The accompanying table compares the average asset allocation of Canadian DB pension plans with the 60/40 asset mix. The average pension fund allocates 38% to alternatives, retains a sizable "home bias" in Canadian equities, underweight in EM equities, and a lower allocation to bond duration.1
- **The pension portfolio has greater expected return than the 60/40, but also greater A/L surplus risk based on our model.** In this context, the pension portfolio appears to reach further out the risk-reward frontier to achieve higher expected returns, which can be important for some plans to achieve their long-term return targets, but often at the price of higher surplus risk.
- **Greater exposure to government bond duration could better align the risk factors driving asset returns and liability growth over time, reducing A/L risk.** Leverage can support efforts to align these factors. However, the pension portfolio adopts modest leverage in the data.
- **In our analysis, the estimated risk of alternative and illiquid asset classes is based on a public market proxy asset.** Given that many alternatives are only valued periodically, volatility is artificially smooth compared to public market assets despite potentially similar risk factor profiles. The smoothed volatility of alternative assets can be helpful when financial markets are distressed, limiting observed increases in investment volatility. However, measuring the underlying risk factor exposures of alternatives is important to understand the long-term risk characteristics of the portfolio.

Asset class	60/40	PIAC average
US Treasuries	0.0%	3.6%
Cdn govt bonds	28.0%	17.2%
Bunds	0.0%	0.4%
Gilts	0.0%	0.6%
IG debt	11.6%	6.6%
HY debt	0.4%	1.4%
EM USD debt	0.0%	1.0%
Chn govt bonds	0.0%	0.5%
US equity	25.5%	11.0%
Cdn equity	1.7%	4.4%
Jpn equity	3.5%	1.5%
UK equity	1.9%	0.8%
Eur equity	7.9%	3.4%
EM equity	12.3%	8.5%
Chn equity	1.5%	0.5%
US small cap	2.4%	1.1%
Cdn small cap	0.1%	0.3%
EAFE small cap	3.0%	1.3%
Global infrastructure	0.0%	8.7%
US private credit	0.0%	2.1%
US private equity	0.0%	14.8%
US real estate	0.0%	13.7%
Proportion fixed income	40.0%	31.2%
o/w liquid fixed income	28.0%	22.3%
Proportion equity	60.0%	32.9%
Proportion alts	0.0%	39.2%
Return (expected, 10-year average)	5.4%	5.8%
Volatility	10.3%	11.3%
Sharpe Ratio	0.388	0.387
Surplus risk	11.7%	12.4%
Tracking error to 60/40 portfolio	–	2.6%
Total exposure (incl. leverage)	100.0%	103.3%

Notes: Calculations by the Multi-Asset Strategies team based on 10-year expected returns, volatilities, and correlations. Benchmark pension portfolio, shown in capital space, constructed by the Multi-Asset Strategies Team using our universe of asset classes, based on the Pension Investment Association of Canada's (PIAC) report on average Canadian pension plan holdings and by making reasonable assumptions as to the decomposition of global equity fund holdings.

MAS model portfolios

Model portfolios in the accompanying table demonstrate potential options for investors to enhance risk-adjusted expected performance. The objectives are to design alternative portfolios providing incremental improvements over the average pension portfolio. The model asset allocations involve limited tracking error given the potentially high cost of transitioning strategic asset allocations in practice. For plans with higher or lower relative risk tolerance, the sizing of the tilts in these model portfolios can be adjusted accordingly.

Model portfolio 1 increases expected return with constant volatility and surplus risk, without increasing total fund leverage. Key tilts include:

- Reducing corporate credit by reallocating to a mix of long-term government bonds, public market equities and private credit
- Increasing the share of liquid fixed income
- Reducing home bias by decreasing allocations to Canadian stocks
- Implementing tactical tilts within the equity sleeve based on the long-term capital market assumptions outlined in "Key findings" section

Model portfolio 2 incorporates prudent leverage to enhance portfolio characteristics further. While limiting total fund leverage to about 20%, the proposed reallocations enhance expected return, increase the expected Sharpe ratio and reduce surplus risk. In Model 2, the tilts remain relatively small, but they can be scaled higher or lower with a plan's comfort or aversion to leverage and relative risk.

Asset class	PIAC average	Model 1: No leverage	Model 2: Leverage
US Treasuries	3.6%	3.6%	3.6%
Cdn govt bonds	17.2%	20.5%	36.2%
Bunds	0.4%	0.4%	0.4%
Gilts	0.6%	0.6%	0.6%
IG debt	6.6%	3.1%	3.1%
HY debt	1.4%	0.2%	0.2%
EM USD debt	1.0%	1.0%	1.0%
Chn govt bonds	0.5%	0.5%	0.5%
US equity	11.0%	8.5%	8.6%
Cdn equity	4.4%	0.1%	0.1%
Jpn equity	1.5%	1.2%	1.2%
UK equity	0.8%	3.0%	3.0%
Eur equity	3.4%	5.0%	5.0%
EM equity	8.5%	8.9%	8.2%
Chn equity	0.5%	1.4%	1.4%
US small cap	1.1%	3.2%	3.1%
Cdn small cap	0.3%	0.0%	0.0%
EAFE small cap	1.3%	2.0%	1.9%
Global infrastructure	8.7%	8.7%	9.0%
US private credit	2.1%	3.0%	3.8%
US private equity	14.8%	14.8%	14.9%
US real estate	13.7%	13.7%	13.7%
Proportion fixed income	31.2%	29.8%	45.6%
o/w liquid fixed income	22.3%	25.5%	41.2%
Proportion equity	32.9%	33.4%	32.5%
Proportion alts	39.2%	40.1%	41.4%
Return (expected, 10-year average)	5.8%	5.9%	6.0%
Volatility	11.3%	11.3%	11.3%
Sharpe Ratio	0.387	0.396	0.405
Surplus risk	12.4%	12.3%	12.1%
Tracking error to PIAC average	–	0.6%	1.0%
Total exposure (incl. leverage)	103.3%	103.3%	119.4%

Notes: Calculations by the Multi-Asset Strategies team based on 10-year expected returns, volatilities, and correlations. Benchmark pension portfolio, shown in capital space, constructed by the Multi-Asset Strategies Team using our universe of asset classes, based on the Pension Investment Association of Canada's (PIAC) report on average Canadian pension plan holdings and by making reasonable assumptions as to the decomposition of global equity fund holdings.

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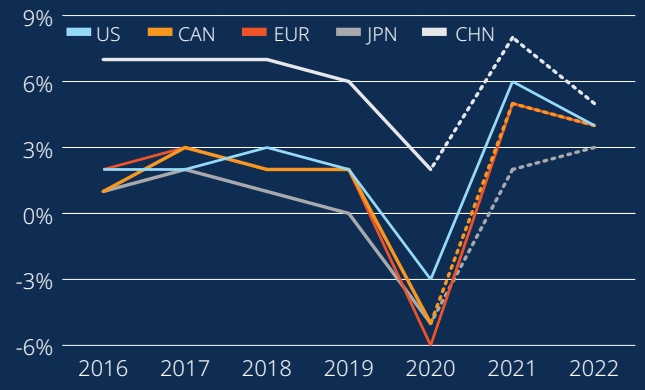
Global macro outlook

Growth and inflation

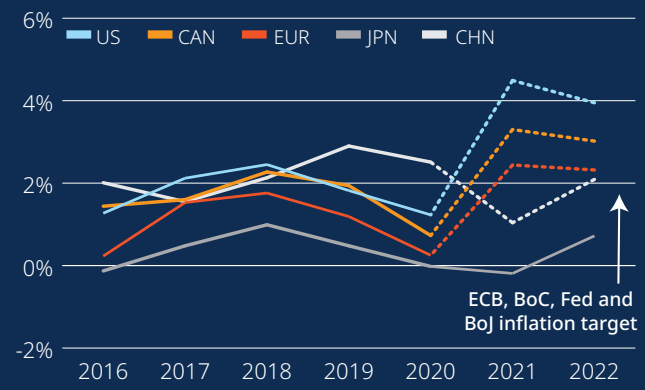
- **After the sharpest economic contraction on record in 2020, many advanced economies are on-track to reach pre-pandemic output levels by the end of 2021.** The US and Chinese economies are the most advanced with real GDP already surpassing pre-pandemic levels. The eurozone and Canada are expected to recover fully by late 2021 to early 2022. In line with consensus forecast surveys, we estimate that the Canadian and US economies grew by about 5% and 5.5%, respectively, this year and the eurozone will register growth of about 5.1%. Growth in all major economies should moderate in 2022 after the strong rebound in 2021. Canada and the US should converge back to their long-term potential growth trends by 2023. While the new Omicron Covid variant or the potential emergence of other variants could threaten the ongoing global recovery, by forcing new lockdowns and/or hurting consumer confidence, there is still much uncertainty about the new strain, including around vaccine effectiveness and severity of symptoms. Omicron stretches the already wide range of macro scenarios for 2022 but does not significantly impact our base case.
- **Inflation surged globally in 2021 and has proved to be more persistent than many economists predicted earlier in the year.** Both demand- and supply-side factors are driving recent inflation pressures. The pandemic recession was unusual in that US household incomes actually rose with unprecedented fiscal support. Retail sales on goods surged well above their long-term trend as US consumers shifted expenditures from contact-intensive services to goods following repeated lockdowns and ongoing concerns about the virus. Global value chains are wobbling under demand-led spending pressures that have outpaced supply-side capacity to increase production. At this stage, major central banks have appropriately looked through these temporary price pressures in our view. As vaccinations allow for a broader reopening of the service sector, demand patterns should begin rebalancing in 2022, easing pressure on goods-producing sectors. Fiscal stimulus in 2021 will fade in 2022 and central banks will gradually withdraw emergency liquidity support, helping to cool today's excess demand pressures. In this context, we expect inflation to begin easing in 2022 and continue converging towards central banks targets of 2% by 2024.

Notes: Average forecasts from Consensus Economics

Above trend GDP growth expected in 2022



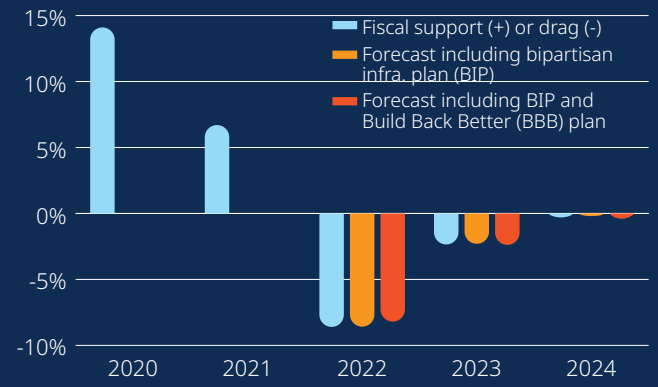
Inflation to stay significantly above target in North America



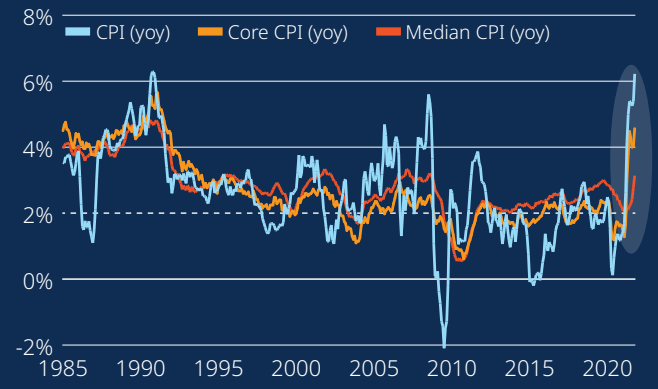
Heightened macro risks

- **A policy mistake in the highly uncertain period ahead is a chief macro risk.** Many central banks are concerned that ongoing inflation surprises in 2022 could trigger a new inflationary psychology that jeopardizes their hard won victory of providing a credible 2% inflation target. After a more hawkish tone in central bank speeches this Fall and the tapering of asset purchases (QE) by the Fed and Bank of Canada (BoC), bond markets have priced-in 2 Fed rate hikes and 4 BoC rate hikes in 2022. In this context, the risk of a policy mistake has become more likely given the uncertain outlook. Raising policy rates too aggressively when inflationary pressures might already be receding threatens to slow the job market recovery. Combined with a fiscal drag as past stimulus roll offs and demand softness caused by the emergence of the a new Covid strain, such as Omicron most recently, the monetary tightening could lead to an unexpected **growth slowdown**. On the other hand, raising policy rates too slowly could lead to overheating and financial instability. And if supply side constraints take more time to resolve than we expect, an **inflation breakout** is a risk for investors.
- **In this section, we evaluate these macro risk scenarios by estimating the impact on asset prices of a growth slowdown or persistent inflation shock** (see pages 41-42)**.** This robustness analysis can be useful to assess the resilience of an asset allocation to potential macro risk scenarios, especially with today's heightened uncertainty. Our analysis indicates that an inflation breakout would be most damaging to the returns of 10-year government bonds and duration-sensitive credit assets while European and Canadian equity would relatively outperform. However, real returns would be negative for all asset classes in the context of high inflation. In a global growth slowdown, government nominal bonds outperform while stock markets generally suffer declines. US equity performs relatively well in this scenario as lower interest rates increase the value of future technology sector earnings. A balanced asset allocation would help insulate investors from these macro risks.

Negative contribution of fiscal policy to growth in 2022



Highest core and headline US inflation since 1990



Notes: Brookings Institution, Council of Economic Advisors, Bloomberg.

Leading economic indicators

Purchasing Managers' Indices (PMI) still forecast solid growth globally
All twenty countries in our sample have PMIs above 50 indicating positive economic momentum

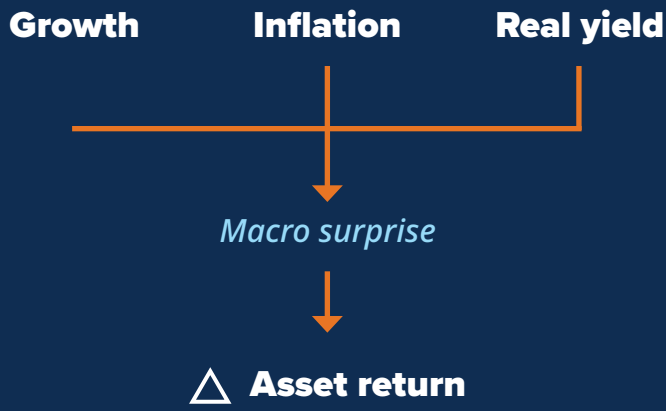
	Jan. 2019	Feb. 2019	Mar. 2019	Apr. 2019	May. 2019	Jun. 2019	Jul. 2019	Aug. 2019	Sep. 2019	Oct. 2019	Nov. 2019	Dec. 2019	Jan. 2020	Feb. 2020	Mar. 2020	Apr. 2020	May. 2020	Jun. 2020	Jul. 2020	Aug. 2020	Sep. 2020	Oct. 2020	Nov. 2020	Dec. 2020	Jan. 2021	Feb. 2021	Mar. 2021	Apr. 2021	May. 2021	Jun. 2021	Jul. 2021	Aug. 2021	Sep. 2021	Oct. 2021
Australia	44.7	55.2	53.3	48.6	50.6	53.1	48.9	49.7	52.3	52.4	54.1	52.7	41.3	52.3	50.6	42.6	43.5	51.2	52.7	52.5	56.8	56.4	59.6	60.4	49.8	58.5	57.8	57.7	58.9	58.8	54.3	52.5	58.6	60.7
Brazil	52.7	53.4	52.8	51.5	50.2	51	49.9	52.5	53.4	52.2	52.9	50.2	51	52.3	48.4	36	38.3	51.6	58.2	64.7	64.9	66.7	64	61.5	56.5	58.4	52.8	52.3	53.7	56.4	56.7	53.6	54.4	51.7
Canada	53	52.6	50.5	49.7	49.1	49.2	50.2	49.1	51	51.2	51.4	50.4	50.6	51.8	46.1	33	40.6	47.8	52.9	55.1	56	55.5	55.8	57.9	54.4	54.8	58.5	57.2	57	56.5	56.2	57.2	57	57.7
China	48.3	49.9	50.8	50.2	50.2	49.4	49.9	50.4	51.4	51.7	51.8	51.5	51.1	40.3	50.1	49.4	50.7	51.2	52.8	53.1	53	53.6	54.9	53	51.5	50.9	50.6	51.9	52	51.3	50.3	49.2	50	50.6
Denmark	48.9	62.1	57.8	59.4	48.9	46.4	46.6	48.2	49.4	45.2	53.5	52.8	53.4	47.6	45.8	37.6	55.5	53.4	55.2	51.5	54	58.9	46.9	42	43.1	46.4	66.1	67.3	66.1	66	70.2	67.8	65.8	71.9
Emerging Markets	49.4	50.5	51	50.5	50.4	49.9	50.1	50.4	50.9	51	51	51	51	44.6	49.1	42.7	45.4	49.6	51.4	52.5	52.8	53.4	53.9	52.8	52	51.5	51.3	52.2	52	51.3	50.7	49.6	50.8	51.6
Eurozone	50.5	49.3	47.5	47.9	47.7	47.6	46.5	47	45.7	45.9	46.9	46.3	47.9	49.2	44.5	33.4	39.4	47.4	51.8	51.7	53.7	54.8	53.8	55.2	54.8	57.9	62.5	62.9	63.1	63.4	62.8	61.4	58.6	58.3
Hong Kong	48.2	48.4	48	48.4	46.9	47.9	43.8	40.8	41.5	39.3	38.5	42.1	46.8	33.1	34.9	36.9	43.9	49.6	44.5	44	47.7	49.8	50.1	43.5	47.8	50.2	50.5	50.3	52.5	51.4	51.3	53.3	51.7	50.8
India	53.9	54.3	52.6	51.8	52.7	52.1	52.5	51.4	51.4	50.6	51.2	52.7	55.3	54.5	51.8	27.4	30.8	47.2	46	52	56.8	58.9	56.3	56.4	57.7	57.5	55.4	55.5	50.8	48.1	55.3	52.3	53.7	55.9
Indonesia	49.9	50.1	51.2	50.4	51.6	50.6	49.6	49	49.1	47.7	48.2	49.5	49.3	51.9	45.3	27.5	28.6	39.1	46.9	50.8	47.2	47.8	50.6	51.3	52.2	50.9	53.2	54.6	55.3	53.5	40.1	43.7	52.2	57.2
Japan	50.3	48.9	49.2	50.2	49.8	49.3	49.4	49.3	48.9	48.4	48.9	48.4	48.8	47.8	44.8	41.9	38.4	40.1	45.2	47.2	47.7	48.7	49	50	49.8	51.4	52.7	53.6	53	52.4	53	52.7	51.5	53.2
Malaysia	47.9	47.6	47.2	49.4	48.8	47.8	47.6	47.4	47.9	49.3	49.5	50	48.8	48.5	48.4	31.3	45.6	51	50	49.3	49	48.5	48.4	49.1	48.9	47.7	49.9	53.9	51.3	39.9	40.1	43.4	48.1	52.2
New Zealand	51.1	54.3	52.8	53.1	51.9	50.8	48.2	48.9	48.3	51.9	49.8	49.4	47.7	55	38.5	26	41.3	55.7	58.9	51.1	53.7	51.9	54.8	49.2	57.3	54.4	63.8	58.1	58.3	59.8	62.4	39.7	51.4	51.4
Norway	57.8	55.9	56.0	53.9	54.1	51.9	48.9	54.3	50.8	54.6	54.0	54.4	51.5	52.9	42.3	42.9	46.6	50.1	45.3	47.9	51.1	54.1	52.7	53.0	52.4	57.4	60.8	59.1	58.3	61.0	62.7	61.8	59.0	58.5
Russia	50.9	50.1	52.8	51.8	49.8	48.6	49.3	49.1	46.3	47.2	45.6	47.5	47.9	48.2	47.5	31.3	36.2	49.4	48.4	51.1	48.9	46.9	46.3	49.7	50.9	51.5	51.1	50.4	51.9	49.2	47.5	46.5	49.8	51.6
S. Korea	48.3	47.2	48.8	50.2	48.4	47.5	47.3	49	48	48.4	49.4	50.1	49.8	48.7	44.2	41.6	41.3	43.4	46.9	48.5	49.8	51.2	52.9	52.9	53.2	55.3	55.3	54.6	53.7	53.9	53	51.2	52.4	50.2
Sweden	51.8	51.4	52.6	50.7	52.9	52.2	51.4	51.9	46.5	46.3	46.1	46.9	51.6	52.5	43.5	36.1	39.8	48.6	51.9	54.8	56.5	59.1	59.7	64.9	62.7	61.8	64.1	68.7	65.8	65.1	65	60.2	64.7	64.4
Switzerland	54.3	54.2	50.7	49.7	49.4	48	45.4	46.9	44.7	49.5	47.9	48.4	48	49.2	43.5	41.2	42.5	41.4	49.6	51	52.8	52.9	54.5	57.3	59.4	61.3	66.3	69.5	69.9	66.7	71.1	67.7	68.1	65.4
UK	52.8	52.1	55.1	53.1	49.4	48	48	47.4	48.3	49.6	48.9	47.5	50	51.7	47.8	32.6	40.7	50.1	53.3	55.2	54.1	53.7	55.6	57.5	54.1	55.1	58.9	60.9	65.6	63.9	60.4	60.3	57.1	57.8
US	54.9	53	52.4	52.6	50.5	50.6	50.4	50.3	51.1	51.3	52.6	52.4	51.9	50.7	48.5	36.1	39.8	49.8	50.9	53.1	53.2	53.4	56.7	57.1	59.2	58.6	59.1	60.5	62.1	62.1	63.4	61.1	60.7	58.4

Notes: Data via Bloomberg and Markit.

Macroeconomic factors and asset returns

- **Long-term expected returns, conditional on today's information set, are mainly explained by risk free rates, unconditional risk premiums and valuations.** But a large portion of realized expected returns are driven by macroeconomic shocks. For example, China's demand slowdown, commodity oversupply and USD strength were the primary explanation driving the disappointing realized EM equity returns in the 2010s.
- **Changes in these macro variables are difficult to forecast with high conviction** and so their contributions to our 10-year forecasts of average returns and risk are limited. However, we can estimate the conditional response of asset returns given a macroeconomic shock. This framework for conditional returns can be of use to investors seeking to understand the magnitude of macro risk exposures in their portfolios; help size an active view about macro factors[1]; or inform asset allocation for investors with future liabilities linked to macro factors (e.g., inflation-adjusted pension payments).
- **To capture causality, our model uses macro "surprises" – that is, shocks to consensus forecasts of macro variables – rather than current readings of the variables.** This framework reflects the intuition that while macro views contribute modestly to long-term unconditional expected returns, macro surprises can and do drive a large portion of realized returns over a cycle.
- **In the following pages, we use this model to map the impact of two macro risk scenarios in 2022 on major asset class returns.** We calibrate these scenarios based on expectations for macro variables in 2022[2].

We measure asset class exposures to shocks to three US-centric macro variables:



[1] See Alain Bergeron, Mark Kritzman and Gleb Sivitsky. "Asset Allocation and Factor Investing: An Integrated Approach", The Journal of Portfolio Management, Vol 44, Issue 4, Quantitative Special Issue 2018.
[2] The macro shock scenarios are calibrated using Oxford Economics' Global Economic Model.

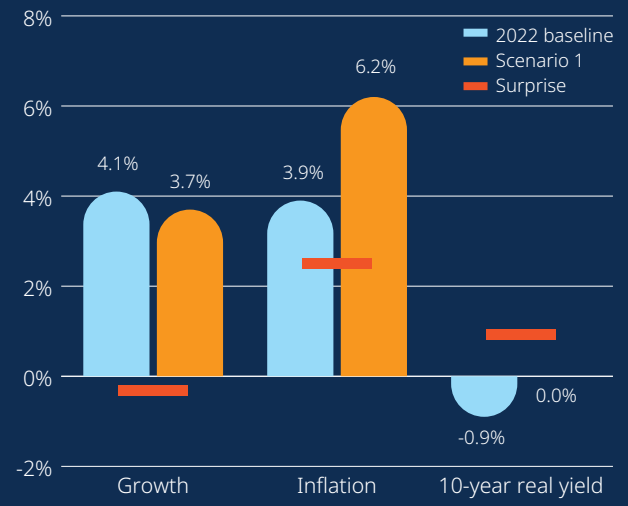
Macro risk scenarios

1 Scenario: Inflation breakout

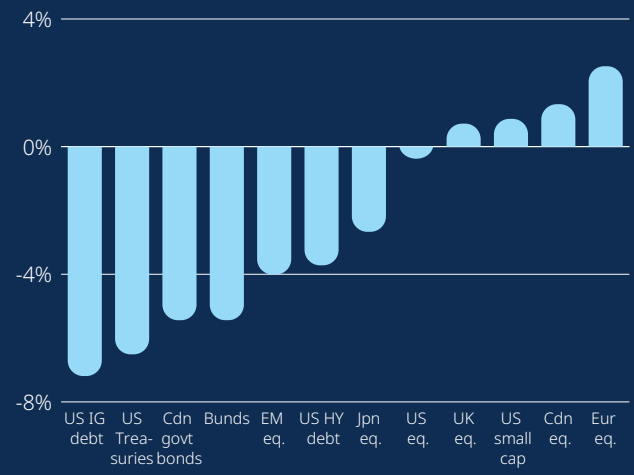
- **An inflation breakout in 2022 is one of the most prominent risks for markets,** even if it is not our base case expectation. Market pricing shows that inflation is still expected to be mostly transitory, with the 5y5y forward breakeven inflation rate at 2.2%, which is broadly consistent with the Fed's 2% PCE inflation target.
- **Sticky inflation could stem from a strong savings-fuelled consumer spending, persistent rigidities in the US labour market and slower-than-expected capacity expansion in global supply chains.** As in the late 1960s, persistent inflation surprises could trigger a new inflation psychology with businesses and workers pricing-in higher inflation when setting prices and wages. The reduced importance of collective bargaining may lessen this effect.
- **If the Fed falls behind the inflation curve, real rates could climb as investors start pricing in the possibility of Volcker-style rate tightening.** In this scenario, an inflation surprise would cause a bear steepening of the real yield curve, while persistent supply chain problems could lead to slower growth in 2022.[1]
- **A breakout of inflation, with the accompanying rise in real yields and risk of a policy error, would clearly be a deep negative shock for sovereign bonds.**
- **Among equities, USD-denominated EM stocks would suffer the most, in part because US dollar strength would ding earnings.** The negative shock to Japanese and US equities likely reflects their growth style tilt. US stock underperformance is likely offset somewhat by the pricing power of their mega-cap firms.
- **European and Canadian equities would fare the best** given the large weight of energy and financial firms in their indices. But note that in an overheating scenario the net real impact on returns would be negative for all asset classes above.

[1] Risk scenarios calibrated using Oxford Economics' Global Economic Model (Oct-21 vintage) and represent shocks to the expected value of 2022 macro variables. Baselines for macro indicators in the figure on the left are (1) 2022 consensus annual US GDP growth, (2) 2022 consensus annual US CPI growth and (3) market-implied one-year-ahead 10-year real yield.

Scenario 1: shock vs. baseline



Shock to expected return

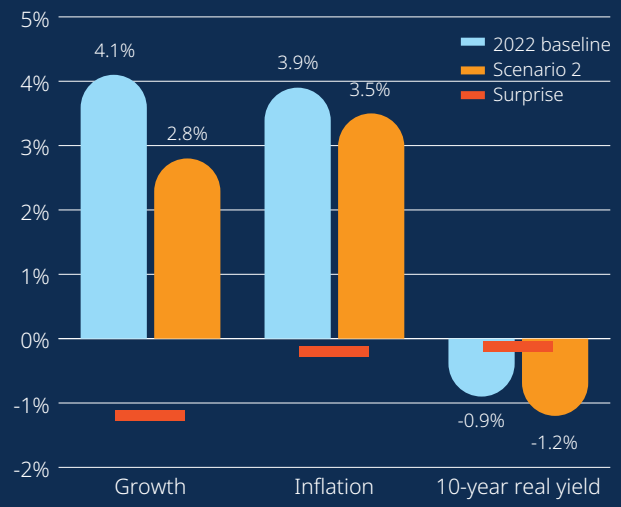


2 Scenario: Global growth slowdown

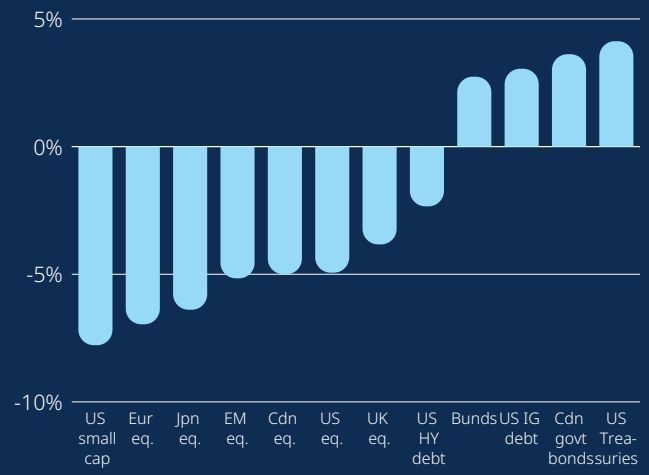
- **Equities' macro exposure is dominated by the growth factor.** While central bank liquidity was certainly a tailwind to equity prices post-Covid, the simple reality of stimulus-fuelled global growth and its impact on earnings explains much of the melt-up. Equities are pricing further growth in earnings in 2022, so a growth slowdown would be a negative shock to expectations.
- **The 2022 US fiscal cliff effect will be one of the largest in history.** US consumers' propensity to spend from savings will be tested, and if households turn skittish on spending, aggregate demand could slump more than currently expected. Possible further weakness in China, especially if the government does not boost domestic credit growth, could compound a potential slowdown in US demand.
- **Weakness in global aggregate demand would generate slower GDP growth in 2022.** Inflation would surprise to the downside, although not to a major degree, considering inflationary pressures are also related to global supply chain shortages. 10-year real yield would slide as future growth prospects worsen.[1]
- **The shock from a growth slowdown is significant for all equity markets with small cap stocks getting hit the hardest.** A growth shock is negative for current and future earnings while also typically driving a rise in asset risk premiums.
- **The diversifying power of long-term sovereign bonds shines brightest in scenarios with negative demand shocks.** With our framework focusing on shocks to US macro factors, the marginal return gain is greatest for US Treasuries. The net impact on a 60/40 portfolio of US equities and Treasuries would be limited to around -1% in this scenario.

[1] Risk scenarios calibrated using Oxford Economics' Global Economic Model (Oct-21 vintage) and represent shocks to the expected value of 2022 macro variables. Baselines for macro indicators in the figure on the left are (1) 2022 consensus annual US GDP growth, (2) 2022 consensus annual US CPI growth and (3) market-implied one-year-ahead 10-year real yield.

Scenario 2: shock vs. baseline



Shock to expected return



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